Installation, Service and User Instructions

Formalin Transfer System / FP100

JUN 2022
Version 1

DISCLAIMER

Mopec
800 Tech Row, Madison Heights, MI 48071
Phone: 1-800-362-8491 Email: customerservice@mopec.com

TRADEMARKS

BETTER BY DESIGN™ Is a registered trademark of Mopec

Owner’s Record

Model No.: _____

Serial No.: _____

Voltage: _____

Dealers Name: _____

Dealers Address: _____

Date of Purchase: _____

Document Revisions

Date	Version Number	Document Changes
06-01-2022	1.0	Initial Release

Table of Contents

1 PREFACE

1.1 Description of the User

The FP100 Formalin Pump Station is a pressurized, facilities-level formalin dispensing/distribution station designed to provide multiple workstations with buffered formalin. Our standard station transfers 10% formalin stock from easily replaceable 30 or 55 gallon drums directly to formalin faucets.

1.2 Notations Used in This Manual

- **Width (W)** refers to the left to right measurements as you face the FP100 Formalin Pump Station.
- **Height (H**) refers to measurement from the floor to the top of FP100 Formalin Pump Station.
- **Depth (D)** refers to the measurement from the rear of the station to the front cabinet.
- **(REF)** references a section of the manual for more information.

1.3 Models covered in this Manual

- FP100 Formalin Pump Station

1.4 Explanation of Safety Warnings

This manual employs the following symbols to call attention to warnings cautions and notices.

⚠ WARNING Warning is used to indicate the presence of a hazard which CAN cause severe injury or death if ignored.

⚠ CAUTION Caution is used to indicate the presence of a hazard which Will or CAN cause personal injury or property damage if the warning is ignored.

NOTICE Notice is used to notify people of installation, operation, or maintenance information which is important but not hazard related.

1.5 Obtaining Instructions

Instructions are typically supplied in a document sleeve inside of the FP100 cabinet. At any time the most current revision of this manual can be downloaded from the company website.

1.5.1 Internet

The latest version of the documentation is available at the following address: http://www.mopec.com

1.5.2 Ordering Documentation

Documentation, user instructions and technical information can be ordered by calling Mopec at **800-362-8491**.

1.5.3 Documentation Feedback

If you are reading Mopec product documentation on the internet, any comments can be submitted on the support website. Comments can also be sent to customerservice@mopec.com

We appreciate your comments.

2 Description of the product

2.1 Purpose of the Product

The FP100 Formalin Dispensing, Pump System is a pressurized, facilities-level formalin dispensing/distribution station designed to provide multiple workstations with buffered formalin. Our standard station transfers 10% formalin stock, from easily replaceable 30 to 55-gallon drums, straight to facility formalin faucets. The active distribution system enables a consistent delivery of product while also allowing for increased flexibility when choosing dispensing locations. No longer will a laboratory be required to purchase individual formalin dispensing systems for each workstation. The FP100 system safely pumps buffered formalin solution to designated formalin spigots, simplifying the dispensing process for laboratory technicians. Utilizing an economical 30–55-gallon drum of buffered formalin as its supply, the FP100 also eliminates the messy task of constantly replacing local buffered formalin supplies. Realizing these benefits with the installation of a FP100 will save time and money for any laboratory.

2.2 Process Overview

The FP100 Formalin Dispensing Pump System is a centralized buffered formalin dispensing unit. The unit is used to provide multiple workstations with buffered 10% formalin stock.

2.3 Technical Data

The FP100 is designed and manufactured under the guidelines of:

- **ISO 9001:2015 with Design –** Mopec facility located at 800 Tech Row, Madison Heights MI USA.

2.4 Product Compliance

The FP100 is designed, and manufactured under the guidelines of:

- **EN 61010-1:2010** Safety requirements for electrical equipment for measurement control and laboratory use.

2.5 Product elements

The FP100 Formalin Dispensing Pump System is constructed as one assembled workstation with 3 main elements in its construction:

A. Ramp

The ramp is used to aid users in replacing heavy 30 to 55-gallon drums. Once the drum(s) are placed in the drum storage area the ramp can be lifted and stored in an upright position to minimize floor space.

B. Drum Storage

The drum storage is where the 30 to 55 gallon drums of 10% formalin stock are stored.

C. Upper Cabinet

The upper cabinet area contains the user interface panel and rough-in utility connections for electrical and facility formalin faucets connection.

- Upper Cabinet Controls (c.)
  - Main Power Switch – Powers the unit on/off
  - Touch Screen – interface for Microprocessor controlled features on the unit

2.6 Warranty Statement

Products manufactured by Mopec will be free from defects in material and workmanship and conform to Mopec's description or specifications. If a warranty claim is made within one (1) year from the date of shipment or the date of installation (if installation is provided by Mopec), the defective or nonconforming Product or Part thereof will be repaired or (at Mopec's option) replaced free of charge, FCA Mopec's dock. All warranty claims must be in writing and received by Mopec within the warranty period. The warranty is not transferable (other than to customers of Mopec's authorized Distributors), and will not apply unless the Equipment has been properly installed, maintained and operated in accordance with all instructions; and does not apply to defects, nonconformities, or other failure due to Equipment misuse, abuse, modifications, or other causes outside Mopec's control. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THE WARRANTY AS SET FORTH HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. To the extent that Mopec is acting as a supplier of Products manufactured by a third party, the Products will be warranted only to the extent that they are warranted by their manufacturers and Buyer (or its customer) agrees to look solely to the Product manufacturer for all warranty claims. For shipments outside the United

States or Canada, as to any defective or non-conforming part, the part will be replaced upon return of the part to Mopec. Mopec will owe no obligation to perform any repair or to install any replacement part.

3 Installation

Notice: If you have purchased installation from Mopec your installer will cover section 3

3.1 How to unpackage your FP100 Formalin Dispensing Pump System

3.1.1 Check for freight damage

- If the unit has sustained damage during transit or during unloading from carrier now is the time to file a freight claim.

NOTICE Many large institutions use their own carriers. A freight claim would file with that provider.

- Check for damage to the skid that would result in an unsupported or twisted station.
- Check that the sides of the crate have not been punctured or smashed.
- Check that the top of the crate has not sustained damage or has evidence of being placed upside down.
- Take photographs of any damage and contact Mopec or your private freight carrier if applicable.

3.1.2 Uncrating Contents

- Remove the top boards from the crate. Place in dumpster or out of the way to dispose of later. Watch for staples, nails and slivers of wood.
- Remove the side boards, end boards and plywood from the crate.
- Remove the corner posts of the crate. Pull downward and then sideways to break away from the base.
- Remove all the bracing at the bottom of the skid. Note the small 2”x 4” blocks nailed to prevent the unit from moving.
- Carefully cut the plastic wrap so the unit is not scratched and components are not damaged.
- Unwrap the plastic wrap and foam from the unit.
- Cut and remove and the metal banding material securing the unit.
- Look the unit over for hidden damage. If found, take photos and contact Mopec.
- Remove any optional equipment from the sink, under the sink or behind the doors (if so equipped).
- Ensure all plumbing and wiring is secured and up and out of the way before moving the unit.

3.1.3 Removing Unit from Skid;

- Ensure there is plenty of room to work around the unit.
- Slide the unit back a little more than halfway off the skid, and tilt back until the bottom edge is resting on the floor. Tip the unit back a little farther so the skid can be pulled out from under the unit.
- Then gently put the unit upright on its base, making sure not to drop the unit.

3.1.4 Transporting Unit to final location

- Place the Unit on a. (4) corner dollies, or b. (2) skid dollies on each end. If available one can use c. (2) crank up furniture or Piano Mover style dollies on each end of the station.

a.  b.  c. 

- Wheel the unit to the desired location, pay close attention to the dollies when going over thresholds or entering and exiting elevators.
- Pay attention to door frames with magnetic contacts and door closure devices. Watch for low hanging signs in hallways and door arches.

3.1.5 Placing unit into position

- Before you unload the equipment check that the utilities have been prepared in accordance to the Mopec rough-in drawing for your model workstation.
- Check the floor condition is clean dry and level as possible. Masonite boards can be used to protect softer styles of flooring.
- Remove the unit from the dollies and set on the Masonite boards.
- Slide the unit back to the desired distance, if different than the approval drawing.

NOTICE Do not slide the unit on soft vinyl flooring it will tear the flooring. If the unit must be adjusted, it will have to be moved one end at a time on soft vinyl flooring. The unit will slide on other hard smooth surfaces.

- Confirm the distance of the unit from the wall is 3” (inches) or more.
- Level the unit using retractable leveling feet on bottom of station.

3.1.6 Electrical Connection

- The 110V power cord is located in rear and exits out on the left side of the unit.
- If hard wiring the station, cut the zip ties that secure the factory supplied electrical whip and prep the wire ends for final connection to the facility.
- The electrical system should then be tested per local codes or guidelines at this time.

3.1.7 Plumbing Connection.

Pluming is made simple as the FP100 Formalin Dispensing Pump System comes ready with a supply shutoff and a 1” NPT stainless steel union for connection. The facilities centralized formalin connection is to be made with this supplied union.

3.2 Decommissioning the Unit

3.2.1 Decontaminate the unit.

- Decontaminate the workstation per your standard processes.

- Determine if drainage from the unit is classified as a biohazard. This will depend on your local ordinances.

3.3 How to Store the Product

3.3.1 Storage in place

- Disconnect power to the unit.
- Wipe WD40 on all stainless surfaces to protect from transfer rust.
- Cover or drape unit with a tarp.

3.3.2 Storage on a skid

- Follow steps in 3.3.1 to prep the unit.
- Lift the unit one end at a time and walk the station side to side onto a skid.
- Strap the unit down across the worksurface and pull down towards the skid. Be sure to put padding on the edges of the worksurface where the straps contact the sheet metal.
-

3.4 Disposal and Recycling

Disposal of the unit is ultimately up to local codes and guidelines. The following section breaks down the materials of construction for recycling purposes.

3.4.1 Stainless Steel

- The upper cabinet, drum storage, and ramp are made entirely of 304 stainless steel and aluminum. Remove all electronics and recycle appropriately.

3.4.2 Ferrous Steel

- There is no ferrous steel used in the construction of the FP100 Formalin Pump Station..

3.4.3 Plastic

- Grating that the formalin tank rest on are made of Corvex® which is an isophthalic polyester resin that offers a high level of corrosion and impact resistance. Remove and recycle appropriately.
- The fluid lines, fittings, thermoplastics like polypropylene, vinyl and polyvinylchloride and should be recycled accordingly.

3.4.4 Electronics

- The unit has internal circuitry, circuit boards, touch screen, and actuators that should be recycled as electronic components.

4 Quick Start Guide

4.1 Startup

The following section explains how to start the FP100 Formalin Dispensing Pump System and some of its standard functions.

⚠ **CAUTION** The unit must be installed per factory recommendations in section 3.1 of the user manual.

4.1.1 Powering On

- The unit is powered on by the main power switch located on the left side of the control panel.

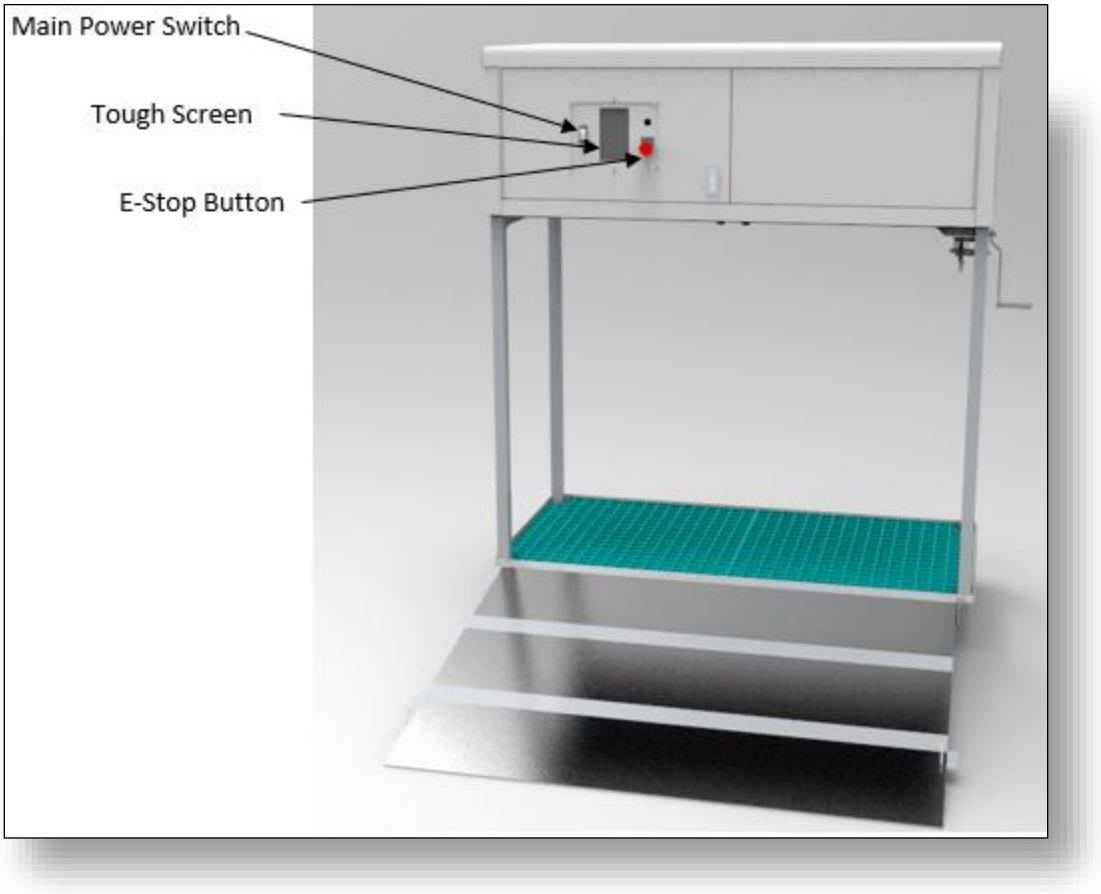

Figure 1. FP100 Front View

- After the unit is switched on the touch screen controller will start to boot up. While the system microprocessor boots up the first screen you will see is a screen showing an red toggle switch. Touching the off button will immediately take you to the main screen.

Figure 2. Initial turn on Screen

- The FP100 will land on its home page after all processes have finished loading.
- Pull the Estop button to release the emergency release.
- Press the Automatic button at the at the top of the screen to turn on the system. Automatic mode selection will automatically detect both drums and pressurize the system for use.

4.1.2 Operating Touch Screen

- The unit will display all the standard and optional features as buttons on the home page.
- Selecting one of these buttons with a light finger touch will select that action with the green checkmark indicating to the use what mode is currently selected.

4.1.3 Shut down

- Use the main power switch to shut down the unit. This will power down the internal circuitry including the pumps inside the upper cabinet.
- The FP100 is also equipped with a mechanic E-Stop witch which cuts power from any pumps to pressed. The E-Stop button will illuminate red to signal that the Estop is active. The E-Stop button must be reset off in order to resume pumping operation of the FP100.

4.1.4 Screen Layout.

- When the unit is first powered on by the power switch, the unit will then ask the operator on the touch screen to turn on the pressurized system. See Figure 2.
- By pressing the off button on the touch screen, the main operation page will show. The home screen has two main areas which are Actions, and Status

Figure 3. Main Operation Page

4.2 Automatic Mode:

- When in Automatic mode the system determines which barrel to pump from based on the last barrel being used as well as the levels of the barrels. When in automatic mode the system will activate the last barrel used (in either automatic or manual mode) when the new low-pressure condition arises. The barrel selected will be used until that selected barrel switches to empty. When that barrel switches to empty, the system will turn on that barrel "low" icon and automatically switch to the next available barrel to pump from. This sequence will continue as long as Automatic mode is selected and at least one barrel is not low. If all barrels are switched to low, the system will assert an "all barrels empty" alarm and stop trying to pump. Automatic mode is the preferred setting for most facilities and users.

4.3 Manual Modes:

- If at any time the user switches from Automatic to one of the Manual modes, the system will immediately implement the selected Drum as the barrel to pump from. Upon a low-pressure condition, that barrel manually selected will be used to draw from until that barrel is switched to a low state. At that time the system will turn on that barrel "LOW" icon and assert the "barrel empty" alarm and wait in that state until the user either switches to Automatic mode or the manually selected barrel is filled. When switching from Manual to Automatic mode that system will always try to use the last barrel pumped from, proceeding to the next barrels in sequence when that barrel is empty.

4.4 Status:

- The Status menu will display the applicable alerts and monitoring for the optioned equipment built into your FP100. The status section of the main operation page shows the operating nature of each pump and purge

valve, E-Stop condition, systems pressure condition, and drum level condition. The Status icons are available to illustrate the status of the systems operation and are not user interface buttons. The section below lists the function and illustrations of the Status icon.

- The facilities pressure will become “LOW” by having the FP100 turned off for a period or by utilizing facility formalin spigots which reduces the overall system pressure. When the facilities main pressure supply is below the set pressure the Pressure icon will show a status of “LOW”. The pump and purge valve will then turn “ON” to return the facilities pressure to the set pressure. The purge value will remain on for 7-14 seconds to assist in purging the system of air then turn “OFF”. The pump will continue to remain on until the system is pressurized. The images below illustrate these operating conditions in systematic order.

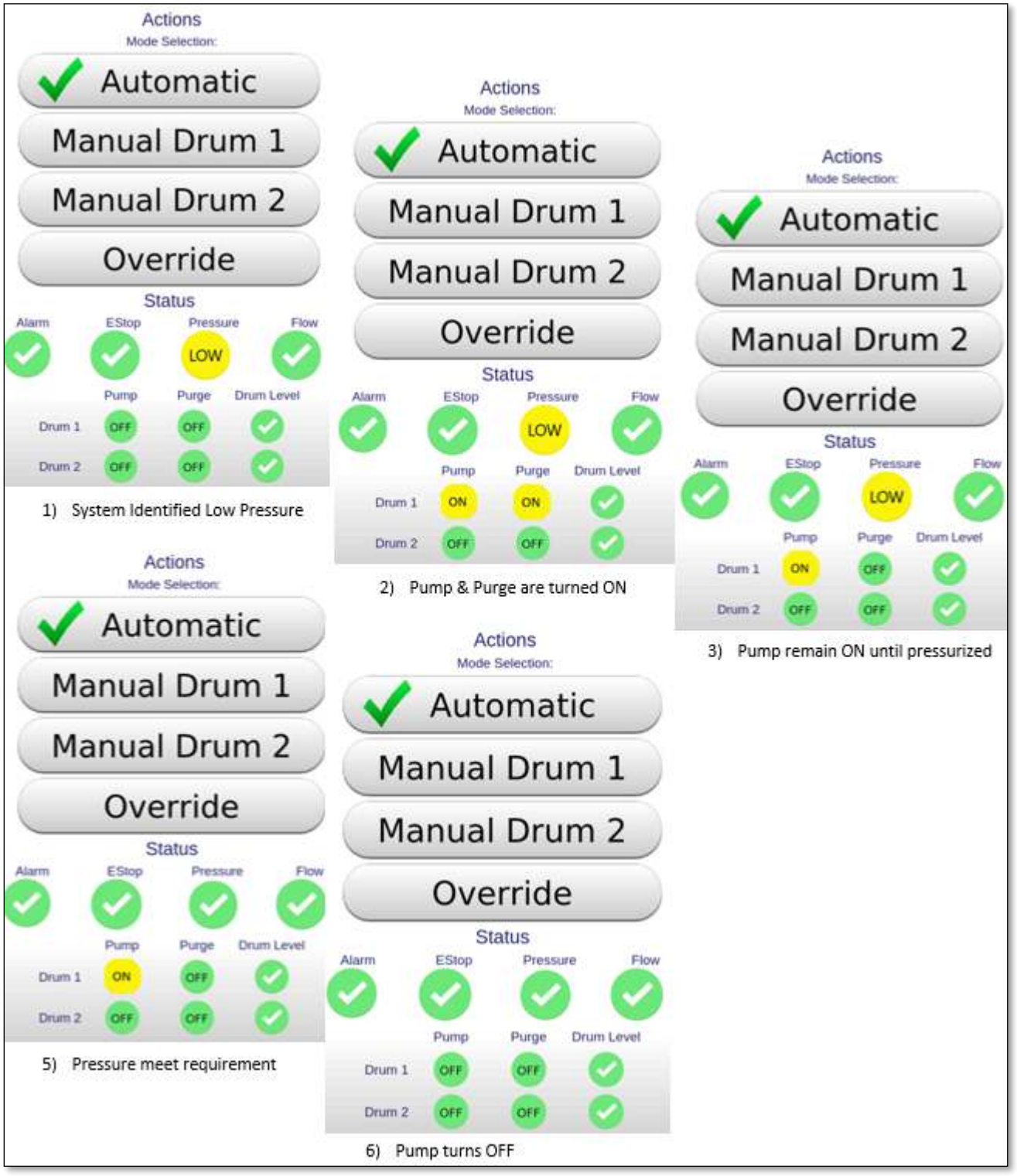

Figure 4. Process of pressurizing the system

- When the facility formalin dispensing spigot is used the FP100 detects the flow of fluid in the system and will indicate this on the screen by showing an “ON” icon beneath Flow.

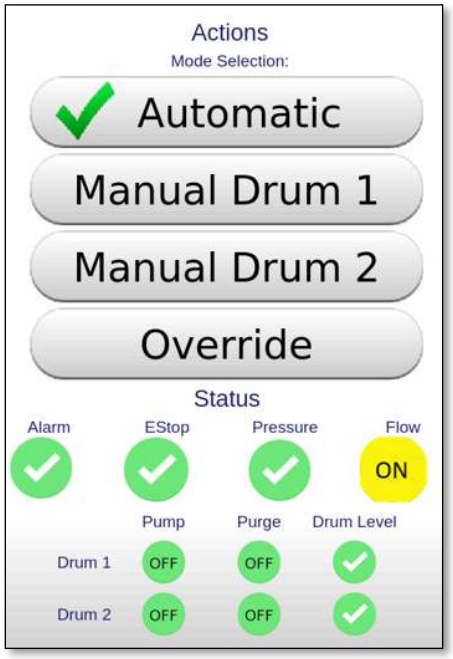

Figure 5. Flow indication status

- A red circle with a white triangle will appear under the E-Stop when the E-Stop button is pressed on the front panel. The button will shut off all electrical operation inside the cabinet. The E-Stop button will illuminate red to signal that the E-Stop is active. The E-Stop button must be reset off in order to resume pumping operation of the FP100.

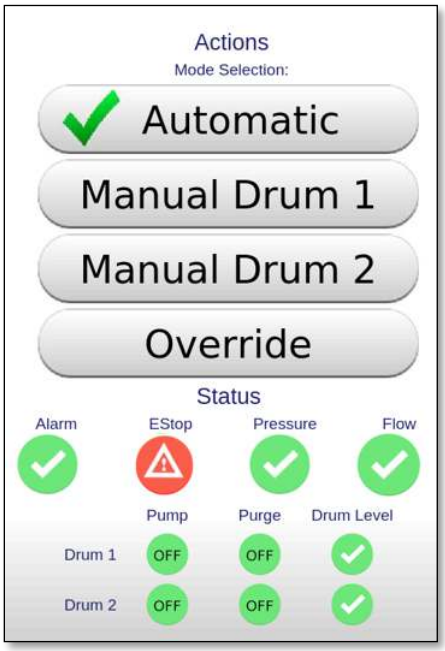

Figure 6. E-Stop status indication

- The FP100 is equipped with drum level indicating sensors. There is one sensor for each formalin drum. The function of the sensor is to indicate when the drum is low and requires replacing. In Automatic mode the FP100 will automatically switch drums when one indicates a low condition. If all drums indicate “LOW” there will be an

auditable alarm indicating that the formalin supply has been depleted and requires changing. During a formalin barrel change it is recommended turning off the main power.

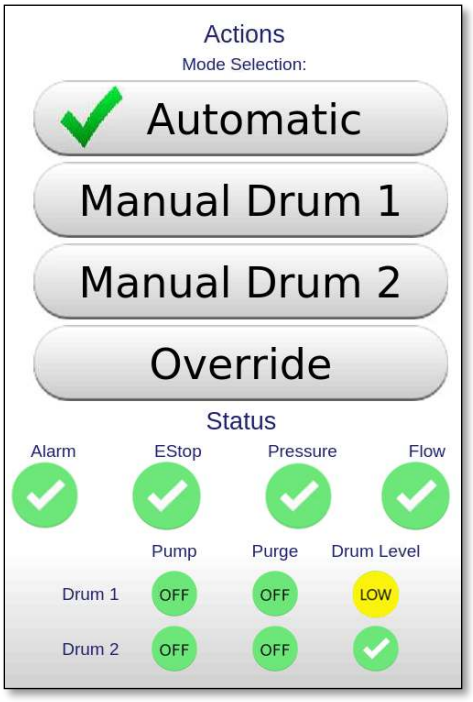

Figure 7. Drum Level low indication.

- The FP100 is equipped with logic-based alarm functionality to inform the operator that the system was shutdown to prevent unfavorable events. A notification window will also pop-up illustrating more detail to the specific alarm(s). Examples that would trigger an alarm would be a leak in the upper cabinet/lower grate area or pumps ran for an extended prior of time. An alarm condition window will pop-up illustrating the alarm condition(s). See images below.

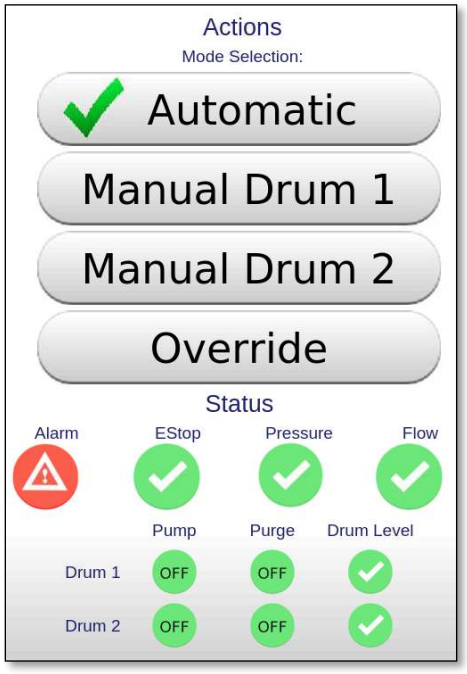

Figure 8. Alarm Status Icon

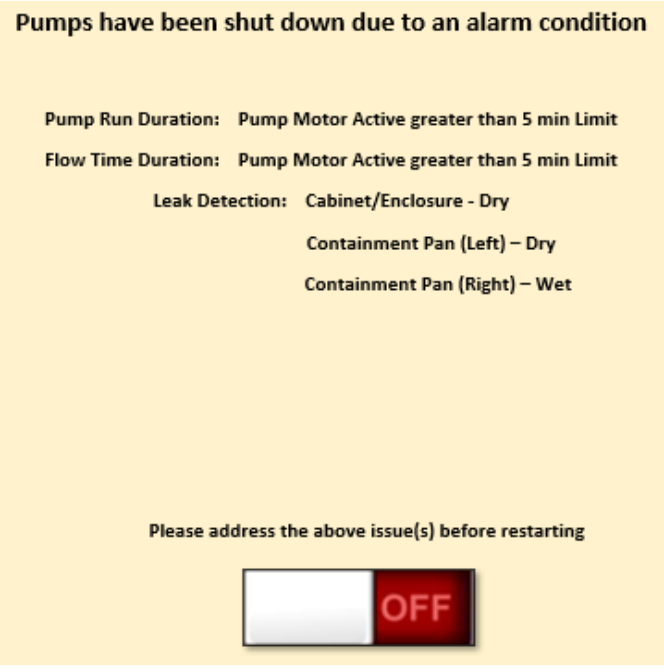

Figure 9. Illustrated alarm condition

5 Barrel Install / Removal

5.1 Barrel Install

1. Power down the FP100 System by turning off the main power switch
2. Install dip tube into new barrel using DrumQuik tool rotating clockwise. The Dip tube is to extend to the bottom of the barrel.
3. Install float switch into new barrel taking care not to bend or otherwise damage the float switch assembly.
4. Connect yellow twist lock connector for float switch.
5. Connect pump to barrel connector by rotating nut clockwise.
6. Float switch number for the barrel must correspond to the pump to barrel connector number (ie.. Pump 1, Float 1), failure to do so may result in system damage.
7. Power on system using the main power switch on left-hand corner of main control panel.
8. Release Emergency Stop(s) by rotating button clockwise.

5.2 Barrel Removal

1. Silence alarm by depressing Emergency Stop on the main control panel
2. Power off the system using main power switch in upper left-hand corner of main control panel.
3. Disconnect pump to barrel connector by rotating nut counterclockwise.
4. Disconnect yellow twist lock connector for the float switch
5. Remove float switch from barrel, taking care not to bend or otherwise damage the float switch assembly.
6. Remove dip tube from barrel using DrumQuik tool rotating counterclockwise.

6 Factory Options & Accessories

6.1 Standard Features

6.1.1 The FP100 is equipped with the following standard features

- Dimensions: 60" L x 30" W x 74" H
- Stainless steel construction
- Touch screen control panel and alert system
- Three leak detection sensors.
- Customization (CUST) & Modification (MOD)
  - If your base unit has a feature customized the Model No. will show a "**CUST**" suffix
  - If your base unit has a feature removed the Model No. may show a "**MOD**" suffix

6.2 Factory Configured Options

Factory configured options are integrated or built into the unit and should be ordered when built. Although not recommended some options can be retrofitted in the field but will require a factory trained technician. This could also require the unit to undergo inspection per local guidelines or electrical safety codes.

6.2.1 Customization (CUST)

- If your factory "Option" has been customized the Model No. will show a "**CUST**" suffix

6.2.2 New Options

- As New factory-built options become available they will be posted on www.mopec.com

6.3 Accessories

6.3.1 Standard Accessories shipped with your FP100 Formalin Dispensing Pump System

- 7" Touch screen display with system status icons
- Emergency stop button with indicator
- 1000 lb. Brake Winch
- Formalin drum loading ramp
- Formalin fluid level sensing with low formalin/drum level alarm
- Three Leak detection sensors. One in the upper cabinet, and two below the drum storage.

6.3.2 Available Accessories

- Dry contacts for remote alarming (BMS: Building Maintenance System)
- Systems greater than two drum capacities
- Optional voltage for export 230v/1ph/50Hz 10amp

6.3.3 New Accessories

- New FP100 Accessories are developed every day! To make a suggestion for a new accessory or to check on our latest go to www.mopec.com for more information.

6.3.4 BMS (Building Management System) Connection

Mopec BMS (Building Management System) connection, option MB1022, is a simple output signal intended to be connected to a hospital remote management system. The function is a dry contact relay output that is triggered by an alert condition on the FP100.

- This signal informs the hospital's management system that the station has an alert condition.
- The BMS signal wires are coiled up and located inside the upper cabinet. Pull the wires out, trim them to the desired length, and connect them to your BMS signal wires from the facility.

6.4 What to Do in Emergency and Exceptional Situations

First follow your laboratory safety procedures. Reference below protocol for unit situations.

- Suspected electrical issue
  - Turn off the main power switch
  - Turn off unit facility breaker if further electrical issues are detected.
- Suspected plumbing issue
  - Press Estop button, remove the power and check for leaks.

7 MAINTENANCE

7.1 How to Maintain the Product

7.1.1 Monthly Maintenance

- Verify operating gage pressure (must be around 40 psig)
- Verify dispensing pressure (must be around 10 psig)
- Check pump cabinet for leaks (around unions, pumps, valves, pressure switches, etc.)

7.1.2 Semi-Annual Maintenance

- Clean the drum liquid level sensor
- Check the safety circuit by wiping a wet paper towel across the sensor to simulate a leak. The local and remote (if equipped) alarms will turn ON. Clean the sensors with a dry paper towel for the alarm to stop. Make sure a spare sensor is on hand in case the sensor fails to reset. Each sensor must be tested once a year.
-

7.2 Stainless Steel Maintenance & Cleaning

7.2.1 Disinfecting Stainless steel

All stainless steel surfaces can be cleaned with soap and water to remove tissue and debris. The stainless steel surfaces can be disinfected with a non-caustic disinfectant.

- Always wipe in the direction of the stainless steel grain.
    - We suggest using BE045 Path Cloud or BE047 Bench Wipe for cleaning purposes.
- Most disinfectants must be followed up with a water rinse to remove the salts that remain after these products dry. Always follow up a disinfection cleaning with a thorough rinse of water.
- DO NOT USE a straight bleach solution to clean your unit. Bleach will eventually erode stainless steel if not thoroughly rinsed.
    - Erosion from chlorine bleach is detectable and will void the warranty.
    - If your process must use chlorine bleach it must not exceed 10% and must be rinsed immediately after disinfection to avoid damage to the metal.

7.2.2 Stainless Care and Maintenance

To maintain your stainless steel product, follow these steps:

- Rinse the surfaces with water frequently.
- Do not touch the surfaces with oily hands.
- Always use soft abrasive fine grit pads to clean grime in the direction of the metal grain.
- Once clean, condition your stainless surfaces with WD40 lubricant or Stainless steel polish.

7.2.3 Rust and Oxidation Formation

Rust can and will occur on stainless if it is not maintained properly. The most common cause of rust is from using a ferrous material on or near the unit. This is referred to as "transfer rust". Salts from cleaners or disinfectants can extract

ferrous materials and deposit or transfer them to the stainless steel. Always rinse all disinfectants before they dry. Decal solutions and fumes are very aggressive and can deposit rust if not cleaned. Formalin use has not been shown to cause rust but it does contain salts and therefore can deposit rust.

There are a few ways to remove rust should you develop it.

- Vinegar – Pour White Vinegar on the rust and let is soak for 5 minutes. Scrub with a soft brush (like a toothbrush) Rinse with water and wipe dry.
- Lemon Juice & Baking Soda – Mix equal parts of each into a paste and spread over affected area. Let it set for 30 minutes before washing away with a damp sponge. Repeat as necessary.
- Rust Remover – as a last resort try a chemical cleaner like Magica Rust Remover Magica Rust Remover | Best Rust Removal Products, and follow instructions.

7.2.4 Scratch Repair

A surface scratch can be repaired using the following technique. Completely removing the scratch will depend on how severe it is.

- Use 120 grit emery cloth or paper and firm pressure to sand the scratch.
- Sanding must always go in the direction of the grain. Sand in a perfectly straight line, avoiding the natural tendency to sand in an arc. Sand the surface until the scratch is gone.
- Polish using a very fine grade of 3M scotch-brite pads. Use the same motions as with sanding. Polish the surface until the original finish is restored.

7.2.5 Fingerprints and solvent cleaning

The most common surface contaminates that occur from normal use are fingerprints and mild stains. These usually affect only appearance and do not have an effect on corrosion resistance. They can easily be removed by a variety of simple cleaning methods.

- Fingerprints can be removed with a common glass cleaner or by gently rubbing with a paste of soda ash (sodium carbonate) and water which would be applied with a soft cloth. It is best to follow with a warm water rinse.

7.3 Mopec Service

PLEASE have the following Information available BEFORE you call from your station ID tag or original order or quote. Reference the ID tag located near the Power Switch under the GFCI outlet. Call 1-800-362-8491 and follow the prompts. Or email us at customerservice@mopec.com

8 TROUBLESHOOTING AND REPAIR

8.1 How to Identify and Solve Problems

WARNING: Trouble shooting section is for reference only. Any repairs should be made by skilled and trained persons following proper facility safety protocols

Error / issue / Failure	Cause	Solution
No 110 VAC Power	Facility breaker has been tripped	Reset facility breaker
	Power system short	Check connections at the wire whip or power cord and plug connector Disconnect power check circuits & harness connections
No 24 VDC Power	No 110 VAC power	Check “No 110 VAC Power” problem
	Faulty 24 VDC power supply	Check primary (110 VAC) and secondary (24 VDC) sides. Replace if defective.
Leak alarm stuck ON and no leak is present	Faulty leak sensor	Make sure leak sensor is dry, clean and make sure the wires are not shorted. A break in this circuit will cause the alarm to sound. Replace if defective.
Drum level indicator light stuck “Low”	Drum level switch needs to be cleaned (stuck ON or OFF)	Clean and manually move the float to check the functionality of the switch. Check that the sensor touches the bottom of the tank. Check drum level sensor switch (must be open when empty). Check float and replace sensor if defective
Pump will not turn ON for a given drum or all	Drum(s) are empty	Replace drum with full drum
	E-Stop pressed	Release e-stop button
	Drum level switch(es) open	See “drum level alarm stuck” issue
	Safety circuits are open	Check wiring and sensor
	Faulty leak sensor	See “leak alarm” troubleshooting
Pump makes loud noises and vibrations	Air leaks from the suction side of the pump	Tighten fittings
	Faulty pump or motor	Replace if defective
Pump cycles too often or can’t build pressure	Expansion tank bladder pressure set too high	Verify proper settings located in the maintenance section.

	Operating pressure set too low	Defective internal pump pressure switch
	Faulty pump, motor or max pressure switch (internal to pump)	Replace if defective
	Air leaks from the suction side of the pump	Tighten fittings, and replace leaking components
No purge or purging time is too short or too long	Faulty purge valve	Check/clean/replace purge valve
Operating pressure drops too fast	Expansion tank bladder pressure not set properly	Verify proper settings located in the maintenance section.
	Operating pressure set too low	Verify proper settings located in the maintenance section.
System loses pressure overnight while system is off	Faulty check valve(s)	Build pressure then turn power off and close all valves overnight to confirm. Monitor operating pressure. Check/clean/replace check valves if pressure drops by more than 10%
	Other leaks along dispensing line	Check dispensing line for leaks. If a main valve is used, close and check

9 Documentation

9.1 Rough in Dimensions

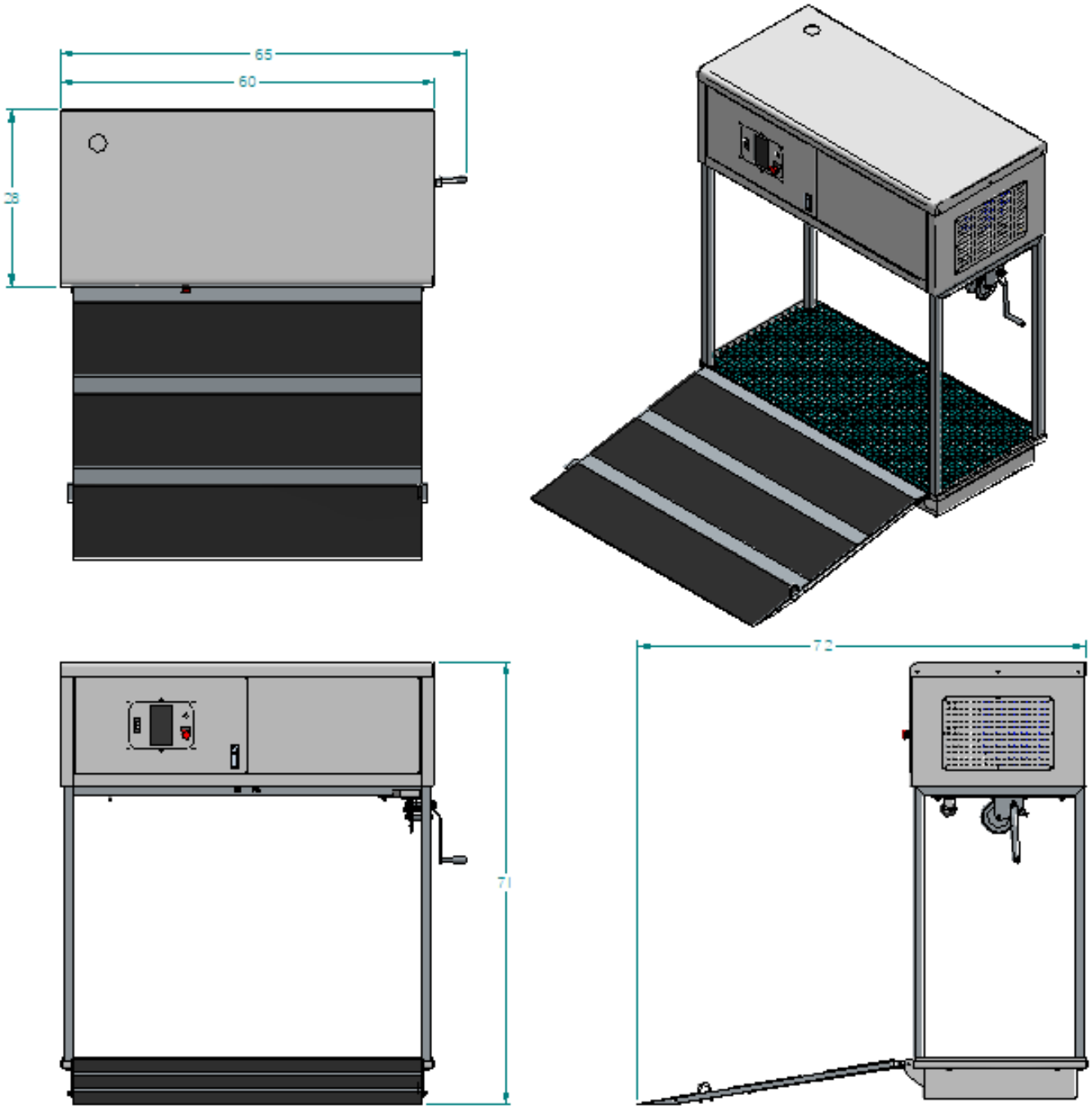

Figure 10. Rough in Dimensions

9.2 Electrical diagrams

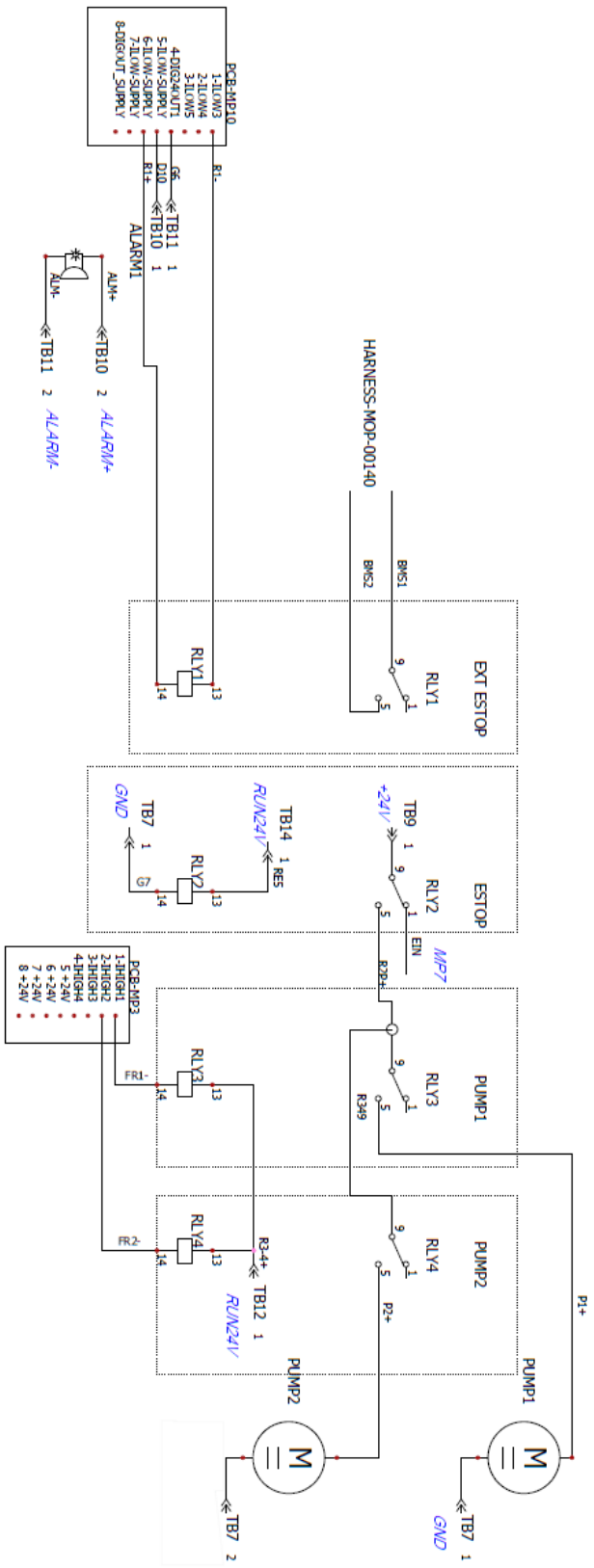

Figure 11. Wiring Schematic 1

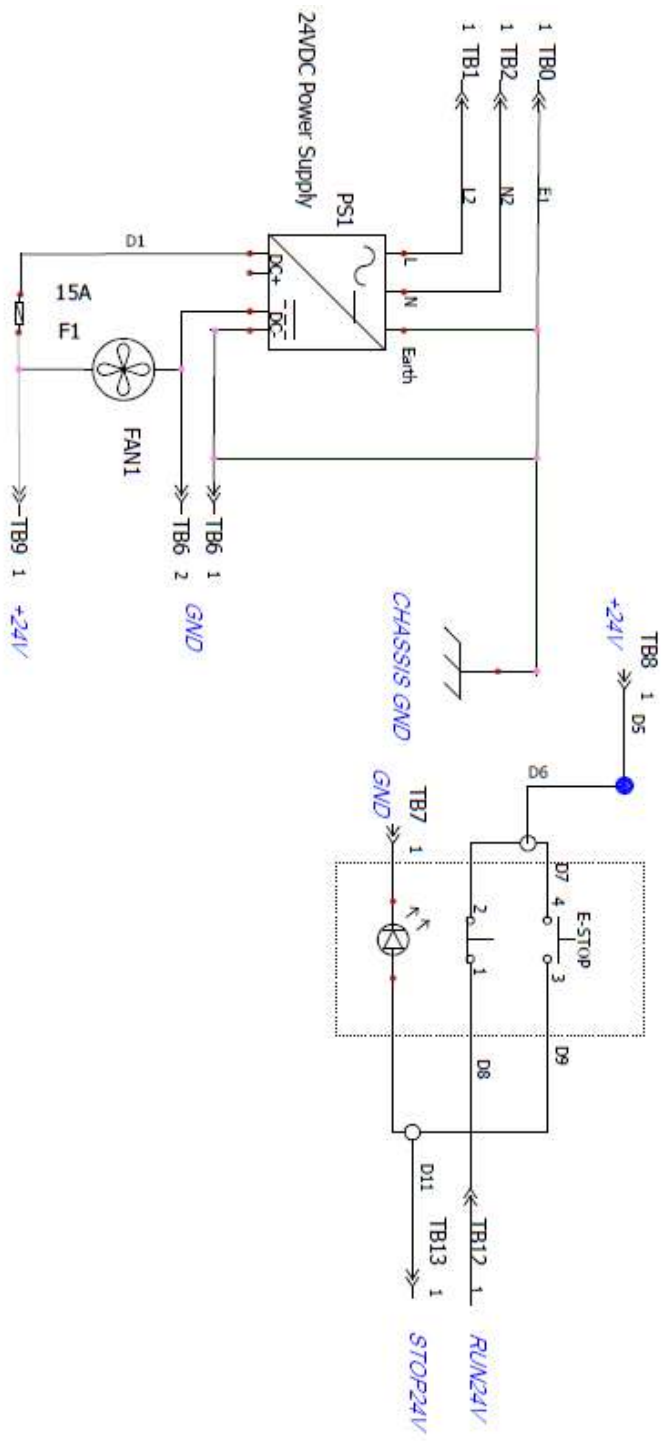

Figure 12 Wiring Schematic 2

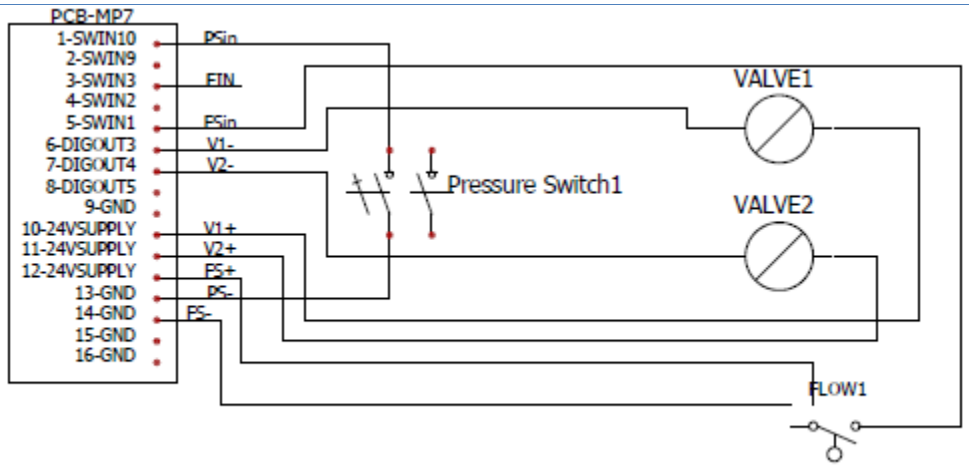

Figure 13. Wiring Schematic 3

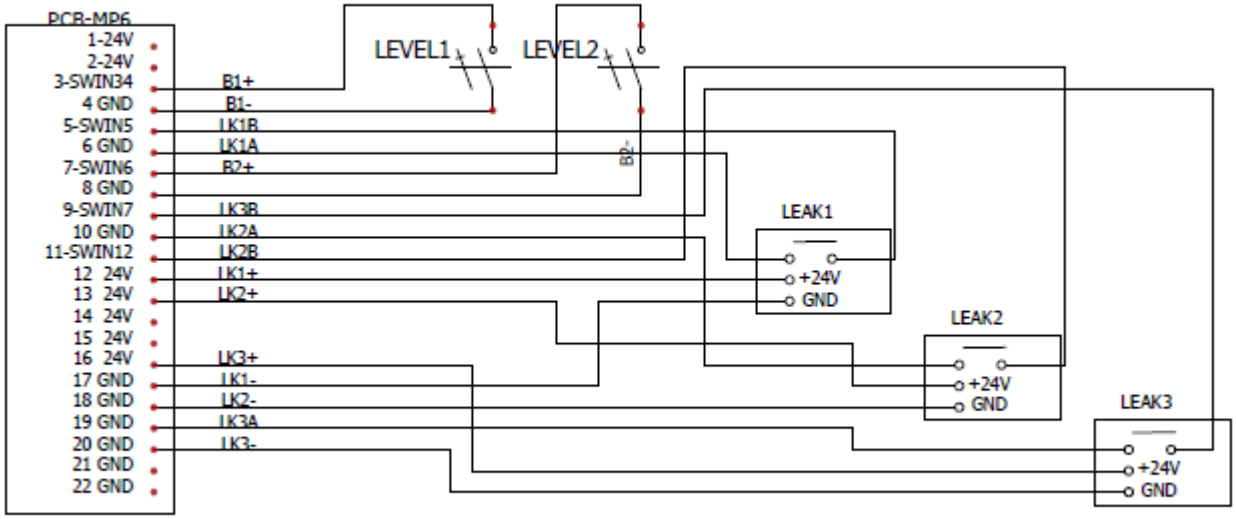

Figure 14. Wiring Schematic 4

10 Appendices

10.1 Spare Parts & Consumables

10.1.1 Spare Parts

General Part Description	Mopec #	OEM #	Use(s)
Screw 8-32 Truss ½" lg.	PB0039	McMaster 91770A194	Various
Plumbing Part Description	**Mopec #**	**OEM #**	**Use(s)**
20 Gal. Horizontal Well Tank	PP1104	20 Gal. Horizontal Well Tank	Formalin dispensing
Collection tubing (¾" Vinyl)	PP0045	McMaster 5233K71	Formalin collection
Electrical Part Description	**Mopec #**	**OEM #**	**Use(s)**
Touch Screen	PE0741	Waveshare 11199	Display
Main PCB	PE0743	n/a – custom to Mopec	Machine control
SD Card, Programmed	PE0835	n/a- programmed	Software upgrades
Water Solenoid Coil (24vdc)	PP1213	Parker 73218BN4UN00N0C111P3	Formalin dispensing
Transfer Pump (24vdc)	PP1008	Aquatec 5513-2F12-B736	Formalin dispensing
Pressure Switch	PP0733	Square D 9013FSG2J21	Formalin dispensing
Leak Sensor	PE0805	n/a – custom to Mopec	Formalin dispensing
24VDC Cooling Fan	PE0750	DIGIKEY: P14753-ND	Cooling Fan
55 Gallon Float Switch (32")	PE0544	Meskotech # LSV-32-11CM10	Float Switch

10.1.2 Consumables

Part Description	Mopec #	Use(s)
Cleaning and Disinfecting Kit	BE125	Cleaning and disinfection of your FP100
SaniPath Disinfecting Wipes	BE036	Disinfection wipes
SaniPath Disinfecting Spray	BE047	Disinfection spray cleaner
ClearSteel Stainless Spray	BE048	Stainless steel cleaner and polish spray
SaniPath Disinfectant Foam Spray	BE045	Disinfectant foaming spray
ClearSteel Stainless Wipes	BE039	Stainless steel cleaner and polishing wipes

11 GLOSSARY

Term	Meaning
FP100 Formalin Dispensing Pump System	Trademarked name of Mopec's flagship FP100 Formalin Dispensing Pump System workstation
Grossing	Gross examination process by which pathology specimens are inspected with the bare eye to obtain diagnostic information while being processed for further microscopic examination.
Pathology	the science of the causes and effects of diseases, especially the branch of medicine that deals with the laboratory examination of samples of body tissue for diagnostic or forensic purposes
VOC	Acronym for Volatile Organic Compounds, an organic chemical compounds that evaporate easily at room temperature.