CleanLogix
Integrated • Sanitation • Intelligence

USER MANUAL

MODEL NUMBER:

EPX-TM

Tote Mixer Delivery System

English (Original Instructions)
Updated: 07/18/2018

Table of Contents

⚠ WARNING:

1. Avoid contact of chemicals with skin and eyes. If contact occurs, see MSDS sheet for further first aid measures.
2. Always wear appropriate PPE
3. Follow safety instructions of chemical manufacturer (MSDS).
4. Always follow plant and OSHA guidelines about the use of equipment.
5. Disconnect power and shut off compressed air and water supply before servicing equipment.

⚠ DANGER:

DO NOT plumb incompatible chemistries on the same system. If incompatible chemistries are to be used, a second system must be installed.

Specifications

Weigh Scale Resolution: 5000 lb. capacity (2,268 kg)

Accuracy, typical, tested with water at 70 degrees F, 100kg load cell, with calibrated overshoot:

- Flojet G56/P56 ¼" AODD pump @ 70 psi: **+/- 4 oz or 2%** of dispense volume, whichever is greater
- Graco Husky 515 ½" AODD pump @ 70 psi: **+/- 8 oz or 2%** of dispense volume, whichever is greater

NOTE: Dispense volume accuracy for pumps other than listed above must be determined via testing and is the responsibility of the end user or system integrator.

Materials of Construction:

- Check valves: Glass filled polypropylene body, Hastelloy spring, Viton seals
- Control Valves: Polypropylene body, EPDM seals
- Pump: Polypropylene body, Teflon diaphragm, Teflon seals
- Fittings: Glass filled Polypropylene
- Manifolds: Polypropylene
- Fluid Hoses: Reinforced PVC
- Tubing: LDPE
- Frame: HDPE
- Fasteners: 316SS / 18-8SS
- Enclosures: 316SS
- Floor Scale: Mild Steel

Requirements

Dimensions:

- Width: 48" (1,219.2 mm)
- Depth: 19" (724 mm)
- Height: 71" (1,803 mm)
- Weight: 287 lb. (130 kg)
  **not including floor scale*
- Floor Scale: 48" x 48" (1,219.2 x 1,219.2 mm)

Compressed Air Supply:

- 10CFM @ 80psi minimum (controls)
- 25 CFM @ 80psi minimum (1 in. pump)
- 100 psi maximum supply pressure
- 3/8" push-to-connect fitting

RECOMMENDED REGULATOR SETTING 80 PSI.

Water Supply:*

- Cold Potable Water
- 7GPM @ 35 PSI minimum
- 100 psi maximum supply pressure
- ¾" hose barb fitting

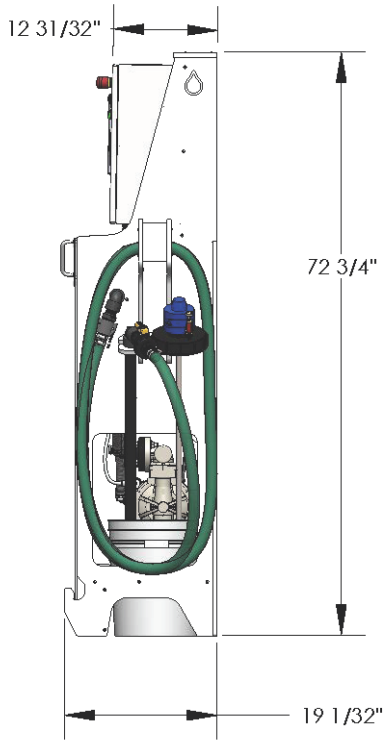
RECOMMENDED REGULATOR SETTING 50 PSI.

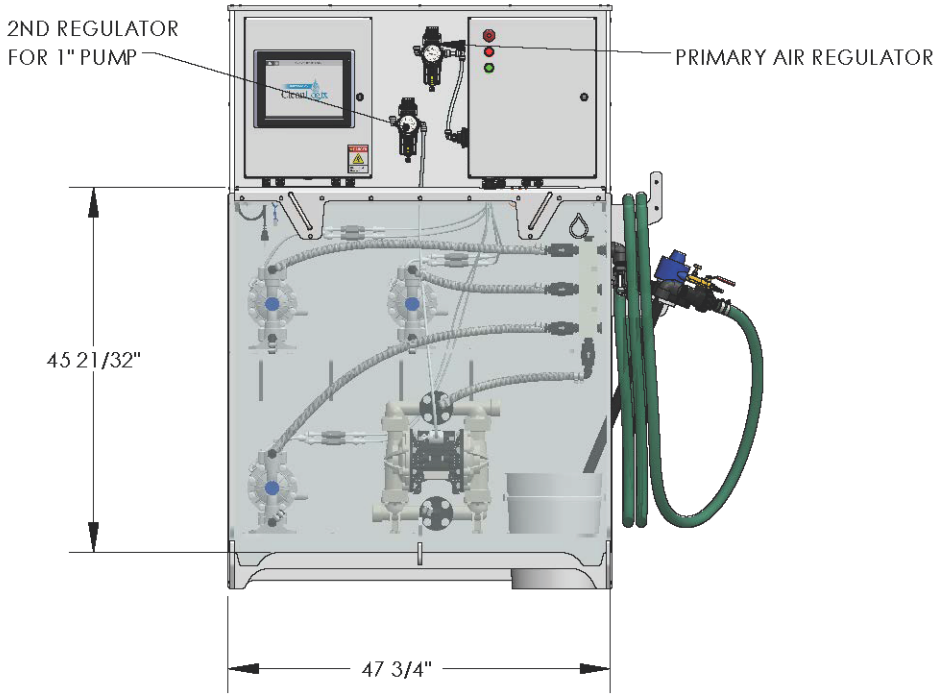
NOTE: A backflow preventer must be installed in the water supply to this unit, per local codes.

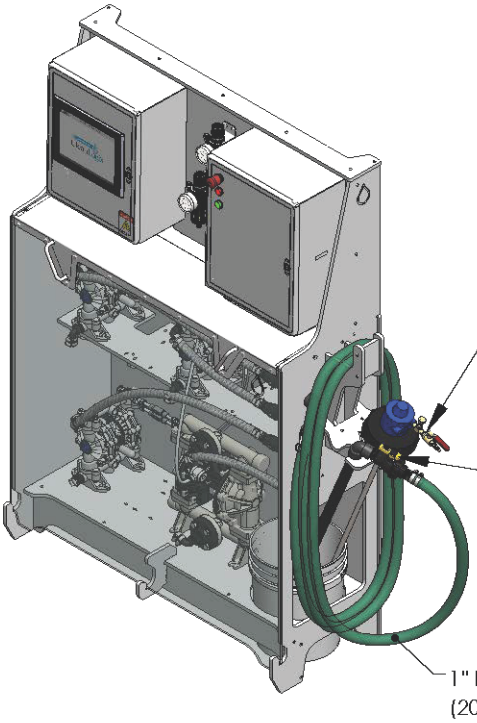
Electrical Connection:

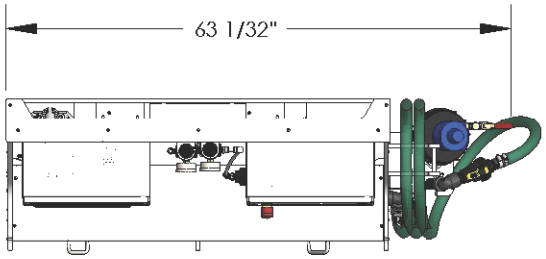
- 110 VAC, 5A, Single Phase, 60 Hz
- GFCI Outlet
- Surge suppression recommended
- NEMA 5-15 plug and 8 ft. cord supplied with unit

Installation Instructions









Installation Instructions (continued)

Install Tower:

Set unit in desired location. Ensure the structure is level in all directions and is not twisting or flexing. If possible, it is recommended to attach the tower to a wall or large shelving rack.

> **NOTE:** Install the tower in a location where the chances of being dripped on or sprayed by chemicals or water is minimized. Do not install in a location that will exceed 100 degrees F for extended periods of time.

Connect Compressed Air:

Using 3/8" LDPE tubing or similar, connect compressed air supply to the unit via the push-to-connect fitting as shown in [Figure 5.2] to the Solenoid system's regulator. Connect a separate, dedicated tube for the 1 in. Pump.

Connect Electrical Supply:

The unit is supplied with an 8' power cord and a NEMA 5-15P grounded plug end. Connect the unit to a GFCI protected outlet. A surge suppression device is recommended.

Plumb Pumps:

Remove the shield to access the included pumps [Figure 5.2].

Using 3/4" hosing or similar, connect the supply lines for the pump to their included hose bards and secure in place with hose clamps. [Figure 5.3].

> **NOTE:** If the system has not yet been configured, it does not matter which pump is plumbed to which chemical. (see page 8 for Chemical Configuration).

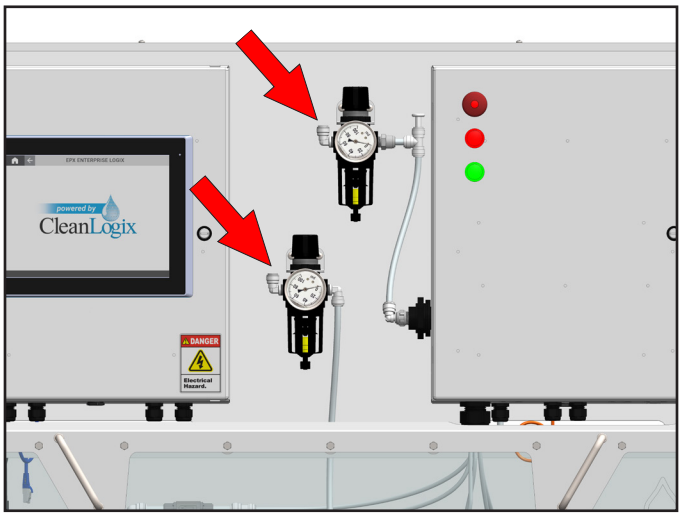


Figure 5.1: Compressed Air Connection

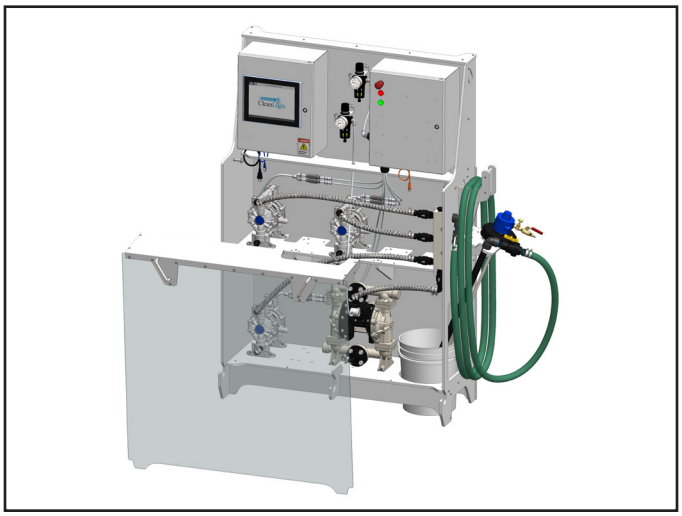


Figure 5.2: Removing shield

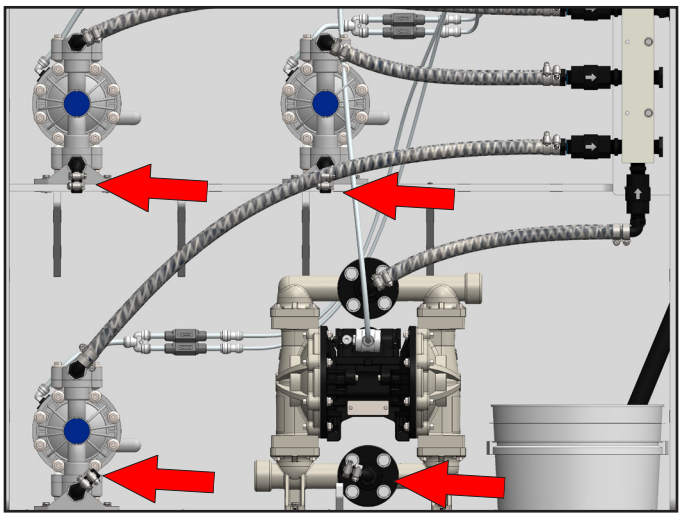


Figure 5.3: Pump hose barbs

User Management

1. Using the HMI, login to the System using the on-screen keyboard

> **NOTE:** Please contact your distributor for administrative login credentials.

2. Navigate to the **MAIN MENU**
3. Select **USER ACCOUNTS** [Figure 10.2]
4. Enter information as necessary for the following procedures [Figure 6.3]:

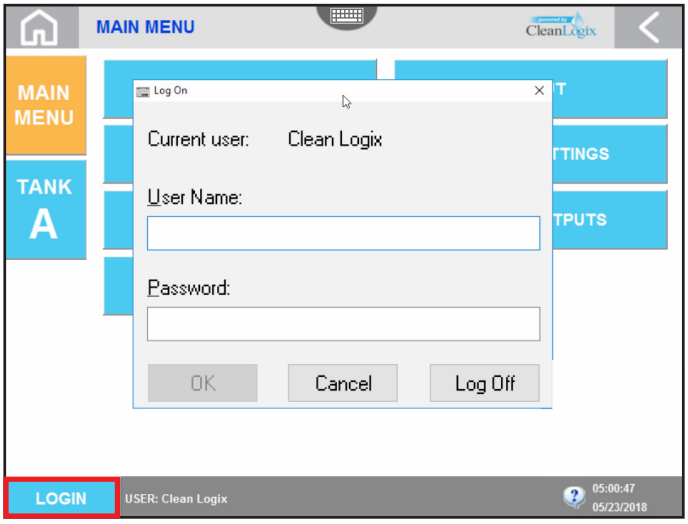


Figure 6.1: Login Screen Pop-Up

Add User:

1. Enter **USERNAME.**
2. Assign to **GROUP.**
3. Set **PASSWORD.**
4. Select **SAVE USER** to add the user to the system.

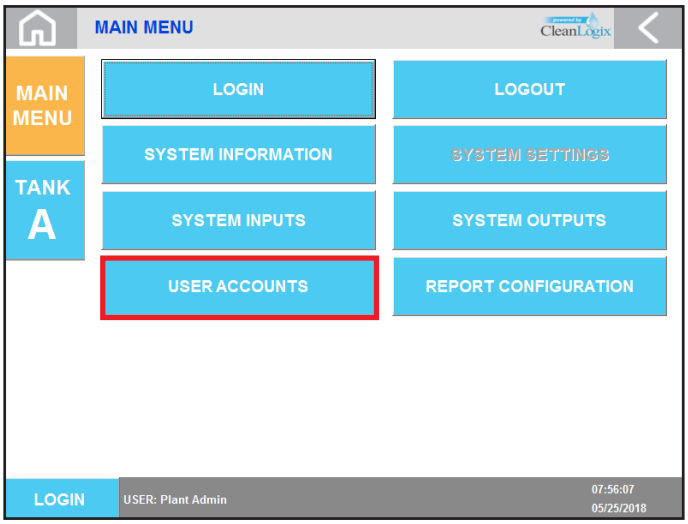


Figure 6.2: Main menu, admin level

Change Password:

1. Enter **USERNAME.**
2. Enter **CURRENT** Password.
3. Enter **NEW** Password and **CONFIRM.**
4. Select **SAVE PASSWORD** to update.

Delete User:

1. Select **USERNAME** to be deleted from drop down menu.
2. Select **DELETE USER** to confirm selection and delete the user from the system.

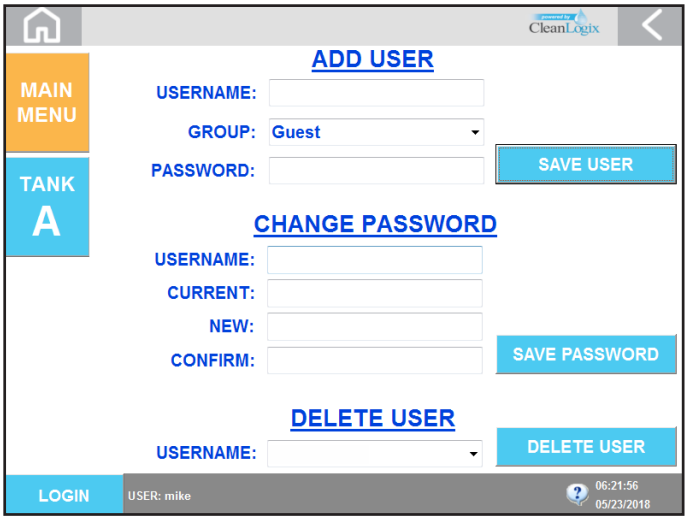


Figure 6.3: User Accounts Screen

Scale Calibration

1. On the HMI, log in as an administrator.
2. Click the Home icon and navigate to **TANK A** > **TANK A SCALE CALIBRATION** [Figure 7.1].
3. Click **ENABLE CALIBRATION**
4. Ensure nothing is on the scale. Do not touch the scale while calibrating!
5. Click the **SET ZERO** button.

   NOTE: Other options will remain grayed out until *ENABLE CALIBRATION* is selected.

6. Place a calibrated weight of a known value onto the floor scale. Use caution to make sure the weight does not shift or fall [Figure 7.2].

   NOTE: Clean Logix recommends the use of a calibrated weight between 50 - 80 lbs (22 - 37 kg). Lighter weights can cause inaccurate dispenses!

7. Enter the exact value of the weight into the **ENTER TEST WEIGHT** box, then click **SET SPAN**.
8. Verify that the scale is reading the correct values by lifting the weight off of the scale and placing it back onto the scale while watching the **LIVE WEIGHT** readout.

Figure 7.1: Tank A Menu

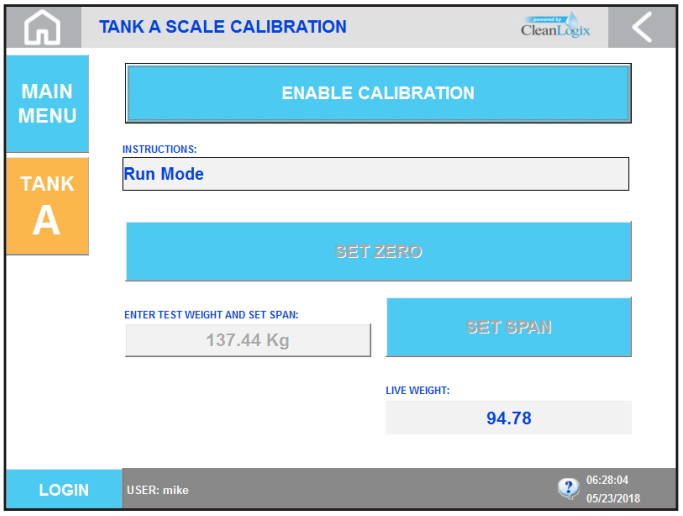


Figure 7.2: Scale Calibration Screen

Chemical Configuration

1. On the HMI, log in as an administrator.
2. Click the Home icon and navigate to the **TANK A** > **CHEMICAL CONFIGURATION** [Figure 8.1].
3. Click on a list item and enter a **CHEMICAL NAME** and a **SPECIFIC GRAVITY** for each output that is connected to a pump. [Figure 8.2]

   If only pounds per gallon is known (PPG), specific gravity can be calculated using this formula:

   *Specific Gravity = **PPG/8.3***

NOTE: PREACT WT. can be left at zero for now. It will be calibrated later in the "Calibrate Pump Overshoot" step of this manual.

Figure 8.1: Tank A Menu

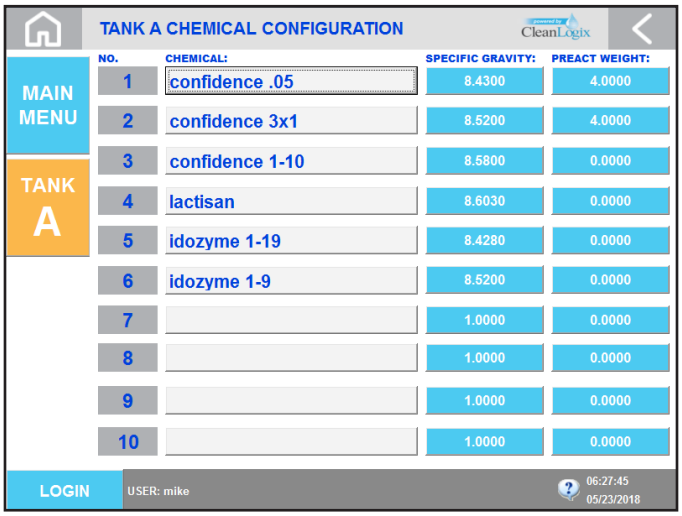


Figure 8.2: Chemical Configuration Screen

Pump Priming

1. Ensure air pressure is being supplied to the unit and all of the Installation Steps are completed.
2. On the HMI, log in as an administrator.
3. Click the Home icon and navigate to **TANK A** > **MANUAL** > **CHEMICAL PUMPS** [Figure 9.1].
4. Make sure the fill wand's ball valve is open and the wand is contained to catch the flow from the pump.

> **⚠ WARNING:**
> Pressing the MANUAL key on this screen will cause the output to turn on and the pump to run! Wear PPE and be ready to contain the flow of chemical in an appropriate vessel!

5. Click **MANUAL** next to the chemical pump which you would like to prime. The pump will run.
6. Once chemical begins to flow out the fill wand, click **AUTO** to turn the pump off.
7. To prevent mixing of chemistry the manifold, hose, and fill wand can be manually flushed with water. To flush the system, select **MANUAL** for TANK A WATER FILL VALVE.
8. Repeat above steps for additional chemicals, if applicable.

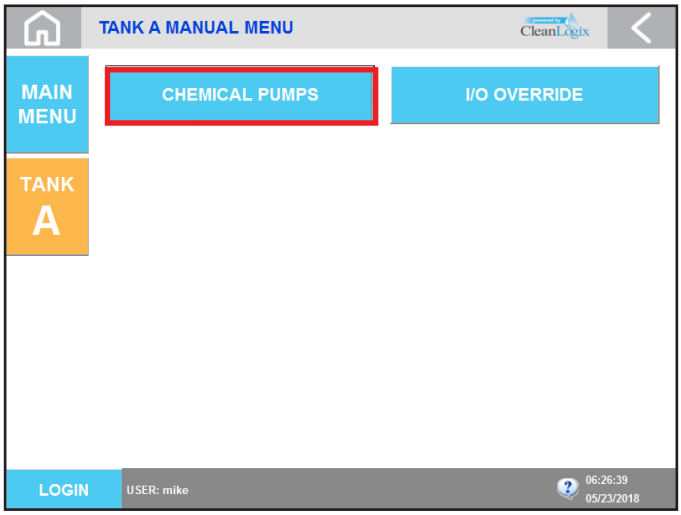


Figure 9.1: Manual Sub-Menu

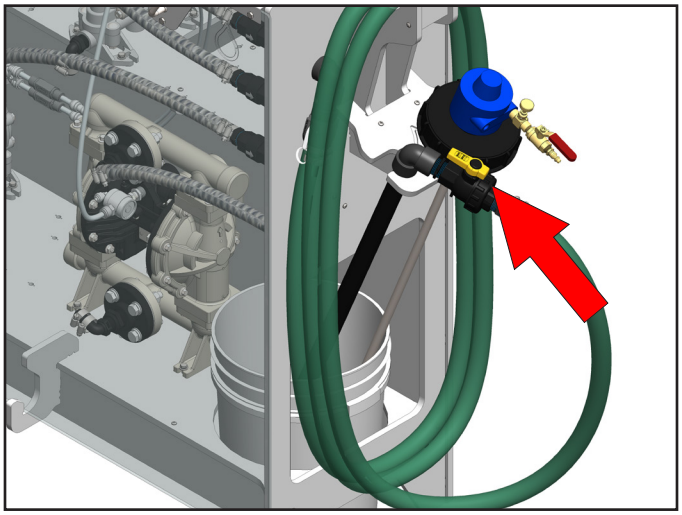


Figure 9.2: Fill Wand ball valve (shown open)

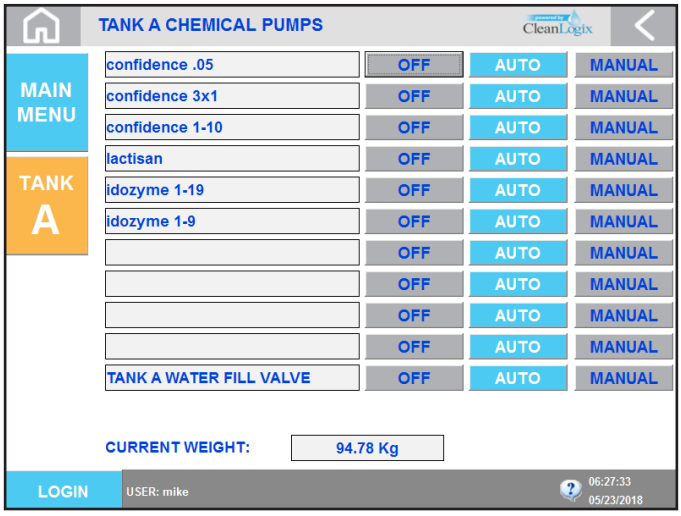


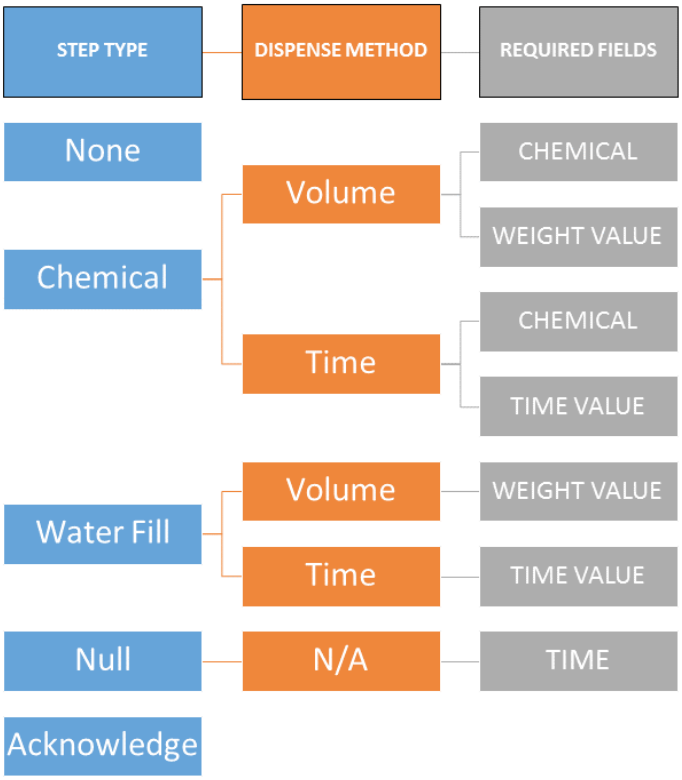
Figure 9.3: Manual Chemical Pumps Screen

Recipes

Recipe Structure:

A recipe is a sequence of steps to perform a delivery procedure. There are 5 types of Steps:

1. **NONE** - This is a "blank" step, and will be skipped.
2. **CHEMICAL** - Pumps product from the specified CHEMICAL. Requires a DISPENSE METHOD to be chosen. Available DISPENSE METHODs are:
   - **VOLUME** - Requires a value to be entered into the VOLUME field. The unit will dispense this amount based on Calibration settings.
   - **TIME** - Requires a value to be entered in the TIME field. The unit will dispense into the tank for this amount of time.
3. **WATER FILL** - Pumps water from the specified 1 in. Pump. Requires a TIME or VOLUME value to be specified (see above for Dispense Methods).
4. **NULL** - Can be used for a time delay. All fields are ignored except the TIME field. Specify the amount of time to delay before the next Step.
5. **ACKNOWLEDGE** - Requires a user to acknowledge a popup request on the HMI before proceeding to the next Step. (All fields are hidden)



Recipes (continued)

Recipe Creation:

1. On the HMI, log in as an administrator.
2. Click the Home icon and navigate to **TANK A** > **RECIPE EDITOR** [Figure 11.1].
3. Use the buttons and the bottom of the screen to navigate through recipes 1-60.
4. The unit can hold up to 60 recipes. Click **EDIT** next to the recipe to configure it.
5. Enter the fields as necessary to create the recipe application [Figure 11.2].
    - Reference the Recipe Structure (page 10) for more information on field requirements.
6. When complete exit using the back button (top right corner). A message will appear asking for changes to be saved, select **SAVE AND EXIT**.
7. Repeat process for additional recipes, if applicable.

Figure 11.1: Recipe List

Figure 11.2: Recipe Edit Screen

Edit Existing Recipe:

1. As an administrator, navigate to the Recipe Editor.
2. Find the recipe needing to be modified and select **EDIT**.
3. Edit the fields as necessary, exit, and select **SAVE AND EXIT** for the window pop-up.

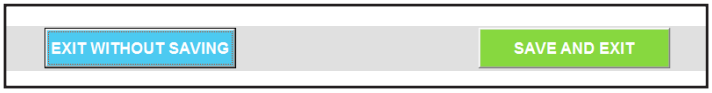


Figure 11.3: Recipe Save and/or Exit Pop-Up

Delete a Recipe:

1. As an administrator, navigate to the Recipe Editor.
2. Find the recipe and select **EDIT**.
3. Select **DELETE RECIPE** to permanently remove the recipe.

Dispensing a Recipe

Recipe Queue:

1. On the HMI, log in as a user with privileges to enqueue recipes.
2. Click the Home icon and navigate to **TANK A** > **TANK A OVERVIEW** [Figure 12.1].
3. Click **RECIPE SELECT** [Figure 12.2].
4. Select a recipe in the list to add it to the **QUEUE** list [Figure 12.3].

Recipe Modes:

There are two different modes in which the unit can process the queue:

SINGLE LOAD

- The unit requires the user to press the **START** button on the overview screen in order to run each recipe in the queue. The start button must be pressed by a user to start the next recipe.

CONTINOUS LOAD

- The unit will run the recipes in sequence one after the other until the queue is empty. As soon as one finishes the next will begin automatically.

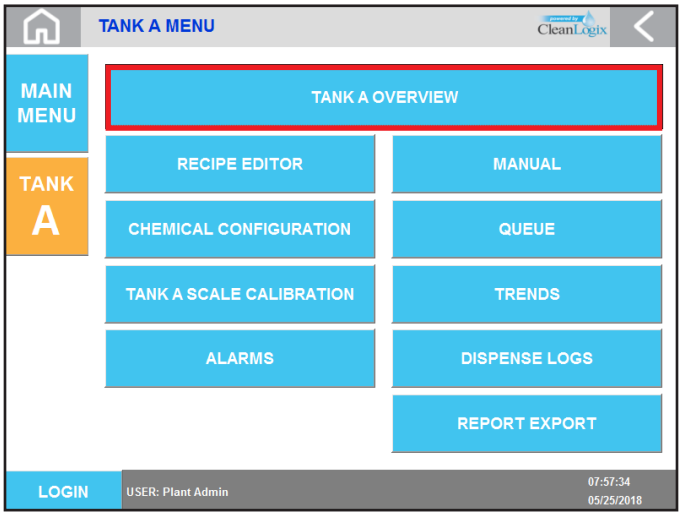


Figure 12.1: Tank A Menu

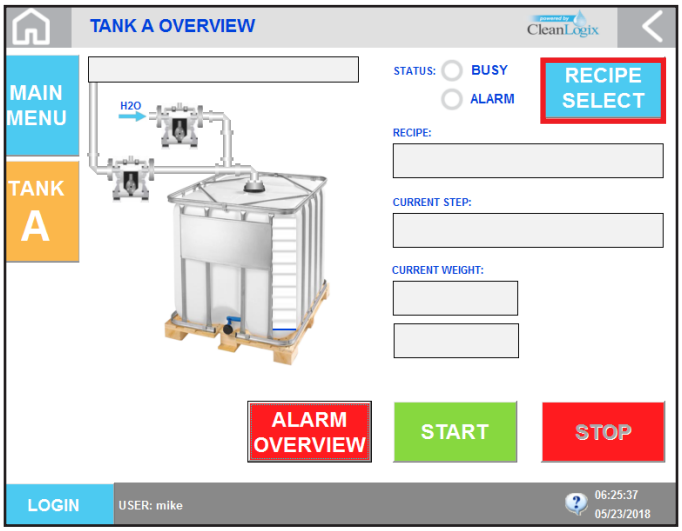


Figure 12.2: Tank A Overview Screen

Figure 12.3: Recipe Queue Screen

Dispensing a Recipe (continued)

Adding a Recipe to the Queue:

1. Return to the **OVERVIEW** page using the back arrow or clicking **RETURN TO OVERVIEW**
2. The name of the recipe "on deck" will appear under the word Recipe on the overview page [Figure 13.1].
3. To run the recipe, click **START**.

NOTE: The START button will be grayed out if there is no user logged in or if the currently user does not have Privileges to dispense a recipe.

4. To stop the process at any point, click **STOP**.
   - Once stopped, the **START** and **STOP** buttons will change to **RESUME** and **CANCEL**
   - To continue the process, click **RESUME**.
   - To cancel the process completely, press **CANCEL**.

⚠ CAUTION:

Pressing CANCEL will end the current process, which may cause one or more alarms to appear if the process was stopped with chemical in the manifold system etc. *USE WITH CARE.*

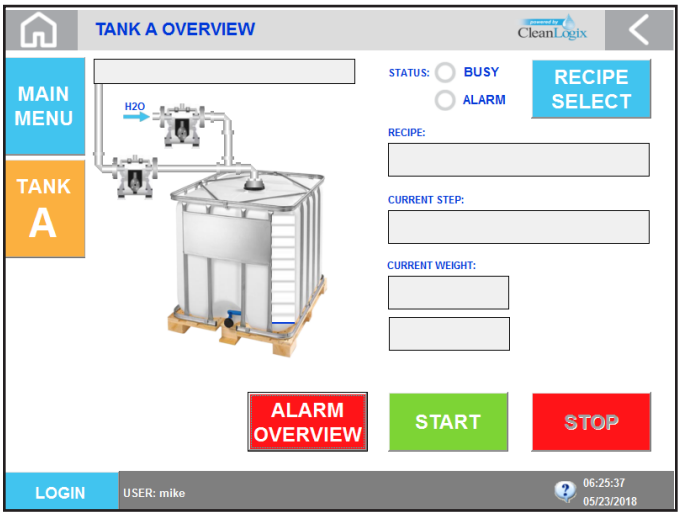


Figure 13.1: Overview Screen

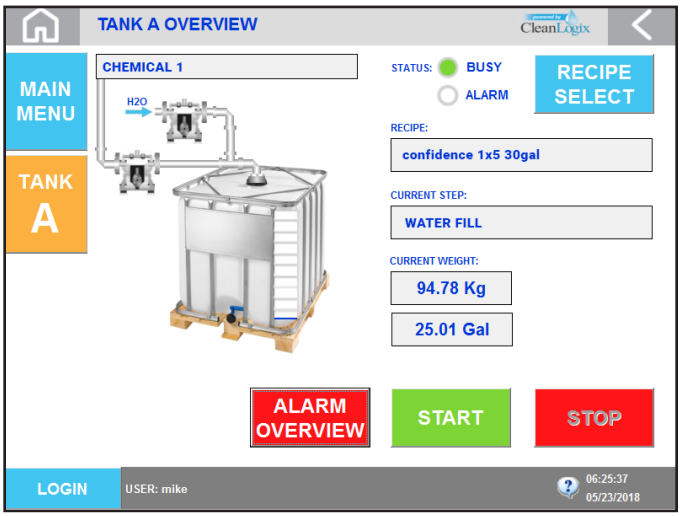


Figure 13.2: Overview Screen - In Process

Reporting

There are a few options for obtaining reports. Review the following options and instructions to access them.

USB Download:

1. Open the Control Panel and insert a USB drive into the back of the screen panel [Figure 14.1].
2. Navigate to **MAIN MENU** > **REPORT CONFIGURATION**
3. Using the drop down menu, identify the USB drive currently in use [Figure 14.2].

> **NOTE:** To identify USB drive, use the *Browse* function to view system folders.
>
> *Example:* "EPX USB (D:)" = **D**

4. Select **CREATE REPORT FOLDERS** to export a new set of reports.

> **⚠ WARNING:**
> Creating a Report Folder will cause any existing report folders to be deleted.

USB Transfer:

1. Navigate to **TANK A** > **REPORT CONFIGURATION**
2. Two option are available to transfer files:
   - *DRAG AND DROP METHOD:*
     1. Select **BROWSE FILES** and find the report
     2. Physically drag OR press and hold to perform a "right click" on the file to transfer it to its new folder location.
   - *SELECT SOURCE & DESTINATION:*
     1. Using the Folder icons, browse for the SOURCE and DESTINATION file(s) for the transfer
     2. Select **COPY FILE** to transfer the report
     3. The checker flag will illuminate green and will display **COPY SUCCEEDED** when complete.

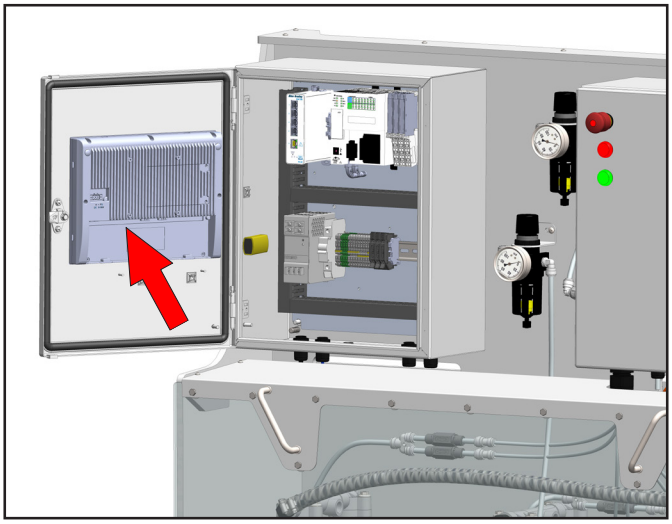


Figure 14.1: USB port location on interior side of screen panel

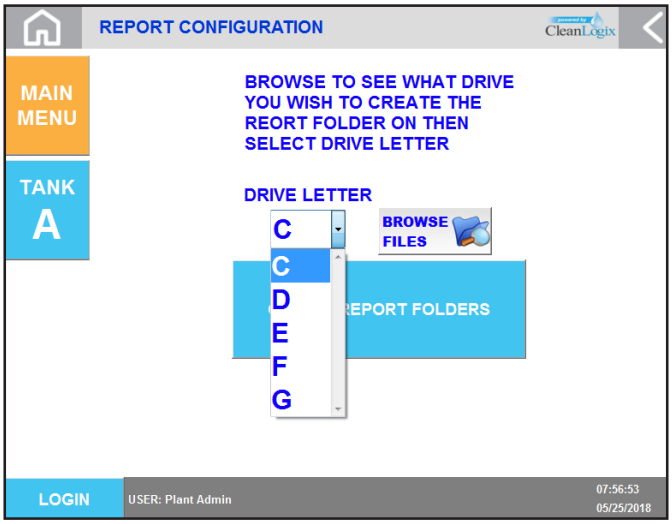


Figure 14.2: Report Configuration screen, USB drive selection

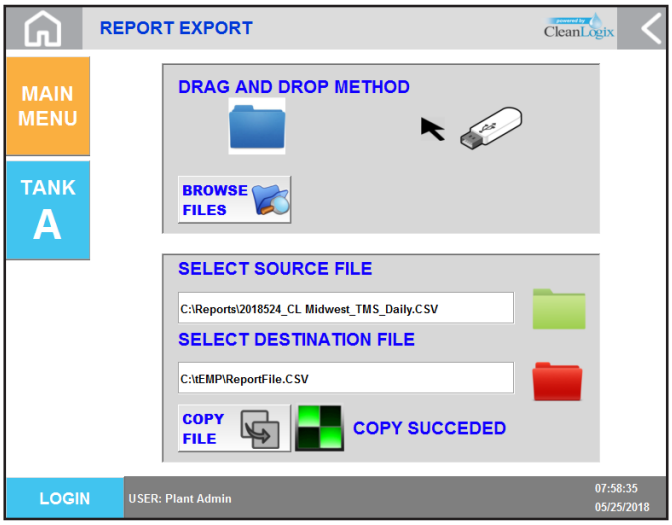


Figure 14.3: Report Export screen (transfer in progress)

Reporting (continued)

CleanIntel Online Reporting:

1. Using a computer, tablet, or smartphone; open an Internet browser (i.e. Google Chrome, etc.)
2. Go to **www.cleanintel.com**
3. Enter login credentials [Figure 15.1]
    - Contact Clean Logix for site and account login configuration.
4. Three system clients of Clean Intel will be available for selection, select **EPX** [Figure 15.2]
5. CSV based reports will be listed below, click the filename to download a copy for review [Figure 15.3]

CSV reports contain date and time stamps for all user activity.

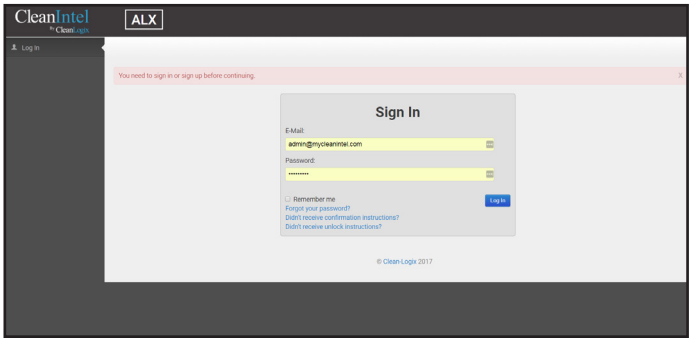


Figure 15.1: Clean Intel login screen (using Google Chrome)

Figure 15.2: Clean Intel system selection

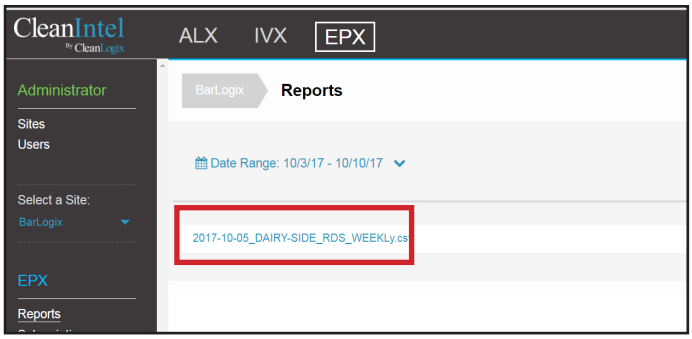
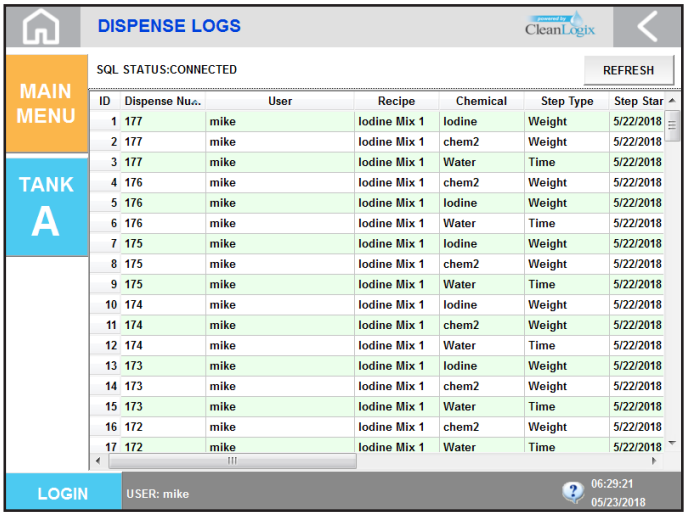


Figure 15.3: EPX Report list (zoomed in)

Local Dispense Logs:

To view dispense logs directly from the unit itself:

1. Navigate to the **MAIN MENU** > **DISPENSE LOGS**
2. A list of all dispense activity will be displayed [Figure 15.4].
3. If recent dispenses are not shown, hit **REFRESH** to reload the page and display more recent activity.



ID	Dispense Nu...	User	Recipe	Chemical	Step Type	Step Star
1	177	mike	Iodine Mix 1	Iodine	Weight	5/22/2018
2	177	mike	Iodine Mix 1	chem2	Weight	5/22/2018
3	177	mike	Iodine Mix 1	Water	Time	5/22/2018
4	176	mike	Iodine Mix 1	chem2	Weight	5/22/2018
5	176	mike	Iodine Mix 1	Iodine	Weight	5/22/2018
6	176	mike	Iodine Mix 1	Water	Time	5/22/2018
7	175	mike	Iodine Mix 1	Iodine	Weight	5/22/2018
8	175	mike	Iodine Mix 1	chem2	Weight	5/22/2018
9	175	mike	Iodine Mix 1	Water	Time	5/22/2018
10	174	mike	Iodine Mix 1	Iodine	Weight	5/22/2018
11	174	mike	Iodine Mix 1	chem2	Weight	5/22/2018
12	174	mike	Iodine Mix 1	Water	Time	5/22/2018
13	173	mike	Iodine Mix 1	Iodine	Weight	5/22/2018
14	173	mike	Iodine Mix 1	chem2	Weight	5/22/2018
15	173	mike	Iodine Mix 1	Water	Time	5/22/2018
16	172	mike	Iodine Mix 1	chem2	Weight	5/22/2018
17	172	mike	Iodine Mix 1	Water	Time	5/22/2018

Figure 15.4: Dispense Logs Screen

Advanced Functions

Manual Control:

- Allows manual control of all outputs.
- **AUTO** is the normal state.
- **OFF** means the output is disabled.
- **MANUAL** turns the output on.
- Reset by clicking **AUTO**.
- All overrides can be reset at once by clicking the flashing icon at the bottom of the screen.

I/O Overrides:

- Allows safety switches to be overridden in the event of failure, to keep the system running while replacement parts are on order [Figure 16.1].
- Air pressure can be disabled (blinking red).

I/O Status Screens:

- Shows the status of every PLC input and output [Figures 16.2 & 16.3]. Green means the input or output is ON, gray means OFF.

Weight Trend Screens:

- Shows a current and historical trend line of the weigh system for troubleshooting purposes [Figure 16.4]

Ops Log:

- Shows a log of all system operations with timestamps for troubleshooting purposes

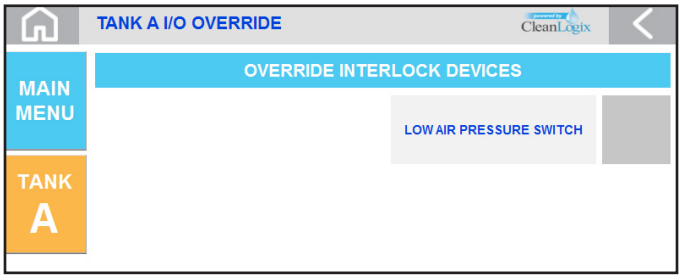


Figure 16.1: I/O Override Screen

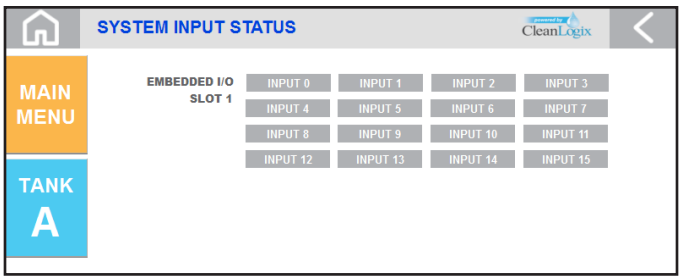


Figure 16.2: Input Status Screen

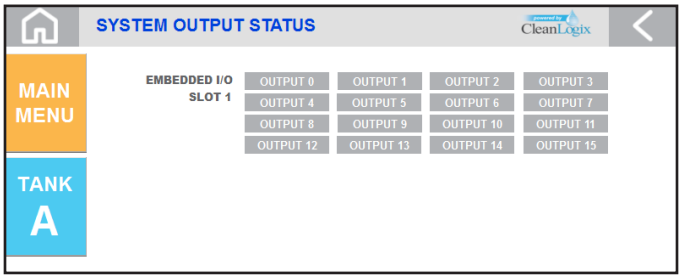


Figure 16.3: Output Status Screen

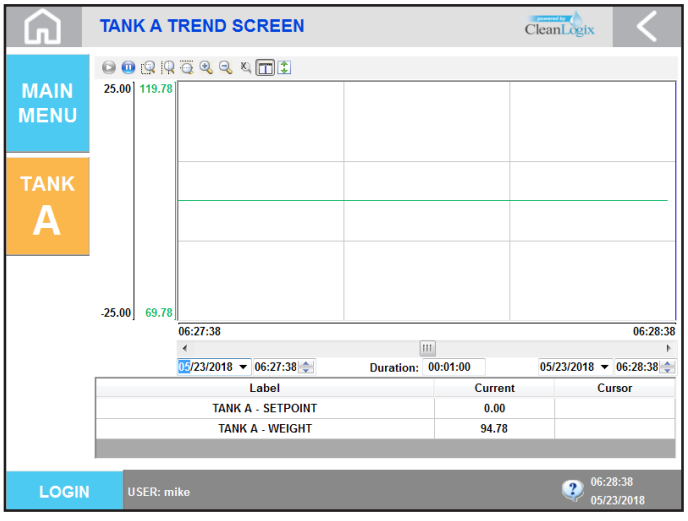


Figure 16.4: Trend Screen

Alarms

If the system detects a problem, it will stop the process (if running) and display an alarm banner [Figure 17.1] message at the top of the screen. The alarm must be reset before the process can resume or a new process can begin.

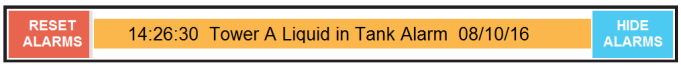


Figure 17.1: Alarm Banner

NOTE: See Troubleshooting section (page 18) for more information on alarm causes and solutions.

Resetting Alarms:

1. Identify the root cause of the alarm based on the status message shown [Figure 14.1].
2. Once the root cause of the alarm has been fixed, the alarm can be reset either by clicking the **RESET ALARMS** button on the alarm banner or by clicking **ALARM OVERVIEW** on the Tank Overview screen [Figure 17.2].

   NOTE: The alarm banner(s) can be hidden for navigational purposes by clicking HIDE ALARMS. This does not reset the alarms!

3. After resetting the alarms, the process can be resumed by pressing the **RESUME** button on the Overview screen. If you do not wish to resume the process, press **CANCEL**.

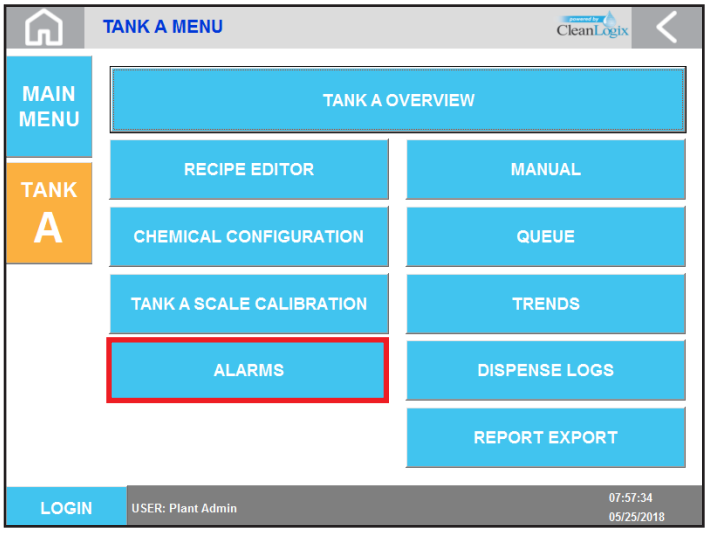


Figure 17.2: Tank A Menu - Alarms selection

Bypassing Alarms:

A user with Administrator privileges may click the **BYPASS ALARMS** button on the Alarm Overview screen [Figure 14.3].

CAUTION: This will bypass ALL alarm conditions for a given tower! Use with caution! Click the button again (now it will be flashing ALARMS BYPASSED) to undo the bypass.

⚠ CAUTION:

Pressing CANCEL will end the current process. This may cause one or more alarms to appear if the process was stopped with chemical on the scale. USE WITH CARE.

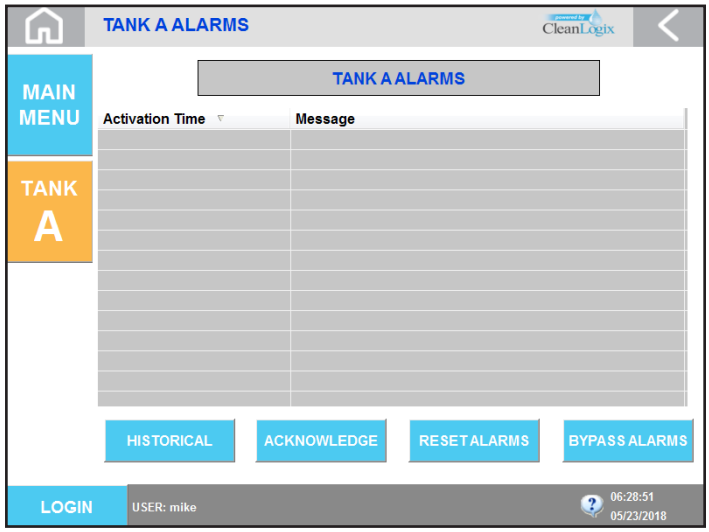


Figure 17.3: Tank A Alarms Screen (shown with no alarms)

Troubleshooting

Estop Pushed Alarm:

Controller Tags: *JugA_ESTOPAlm*

Criteria: *The e-stop button has been pushed*

CAUSE: The e-stop button has been pushed, to solve:

- Firmly pull the Estop button out and make sure the light in the center of the button illuminates.
- Log in with administrator permissions and click RESET ALARMS on the appropriate alarm page.
- If the process is still in a paused state, click RESUME on the TANK A OVERVIEW page to continue the process.

No Flow Alarm:

Controller Tags: *JugAChemNoFlowAlarm*

Criteria: *While the tank is filling (chemical or water fill), the rate of change of weight is less than +20 g/s for a period of time.*

CAUSE: One of the chemical tanks is empty or its pump has lost prime, to solve:

- Verify that the unit has air pressure.
- Check chemical tanks to make sure they are not empty and pump suction lines are submerged.
- Make sure foot valves on the suction lines are functioning.
- Log in with administrator permissions and click RESET ALARMS on the appropriate alarm page.
- Click the RESUME button on the Tank Overview page to try again.
- If alarm reappears, press CANCEL on the appropriate tank overview page and re-prime the affected pump. (see page 9 for pump priming)

Rate of Change Alarm:

Controller Tags: *JugAROCAlm*

Criteria: *While the tank is filling or emptying (chemical fill, water fill, or delivery steps) the instantaneous rate of change in weight is less than -2720 g/s. Activates instantaneously. NOTE: A positive spike can result in a negative "dip" that can satisfy this criteria.*

CAUSE: Someone touched or interacted with the container and/or scale during a dispense, to solve:

- Log in with administrator permissions and click RESET ALARMS on the appropriate alarm page.
- If the process is still in a paused state, click RESUME on the overview page to continue the process.

Low Air Pressure Alarm:

Controller Tags: *JugA_LowAirPressureAlm*

Criteria: *The air pressure switch opened while the system was in use*

CAUSE: Compressed air supply is shut off or does not meet the minimum system requirements, to solve:

- Check the air pressure gauge on Tower A to make sure the air pressure is set to 80 psi.
- Log in with administrator permissions and click RESET ALARMS on the appropriate alarm page.
- If the process is still in a paused state, click RESUME on the appropriate jug overview page to continue the process.
- Observe the air pressure gauge on Tower. If it dips below 40 psi, the compressed air supply may not be sufficient.

Troubleshooting

Low Air Pressure Alarm (continued):

Controller Tags: *JugA_LowAirPressureAlm*

Criteria: *The air pressure switch opened while the system was in use*

CAUSE: Air pressure switch set point on the Tower is too low or the switch is faulty, to solve:

- Log in with administrator permissions and click RESET ALARMS on the appropriate alarm page.
- Go to the MAIN MENU and then SYSTEM INPUTS to view the system input status lights.
- Use the air pressure regulator to lower the air pressure to 20 psi an then gradually increase it again.
- Make sure the correct input light is illuminating when the air pressure gauge reaches approximately 40 psi.
- Refer to the I/O pages on the wiring diagram.
- If the light illuminates at a pressure greater than 40 psi, open the Tower A or B solenoid enclosure and adjust the switch to a lower set point (refer to switch manufacturer instructions).
- If the light does not illuminate at any pressure up to 80 psi, replace the switch.

Maintenance Instructions

Weekly:

- Check for leaks
- Check for corrosion

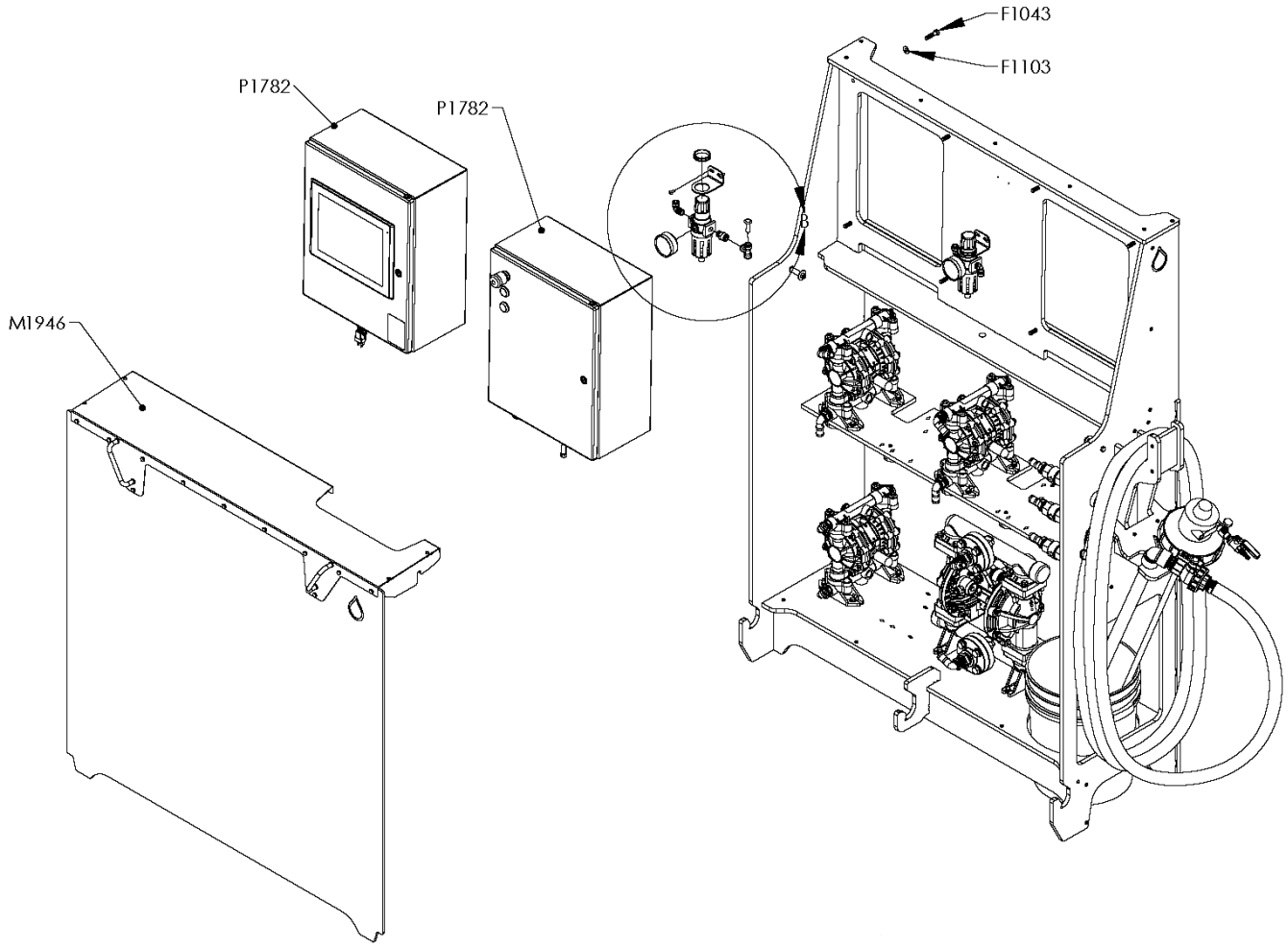
Monthly:

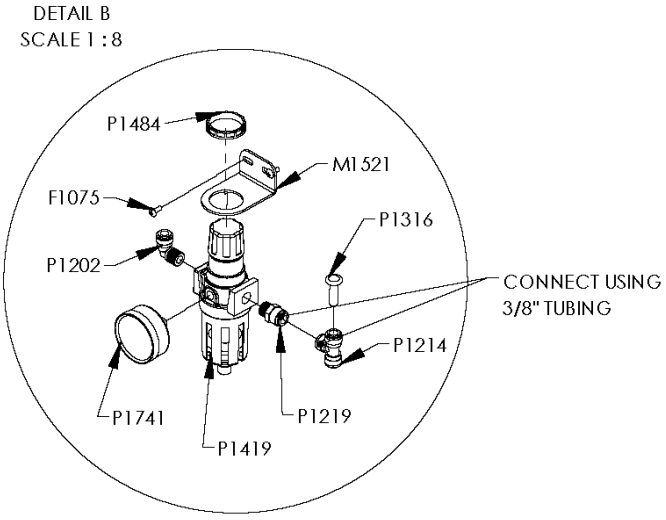
- Check scale calibration and recalibrate if necessary
- Drain water from sight bowl on air pressure regulators
- Check air pressure settings. Refer to beginning of manual for recommended settings
- Verify pumps are secure and fasteners have not loosened over time
- Ensure hoses and clamps are maintaining proper connections
- Clean fill wand and mixer

Annually:

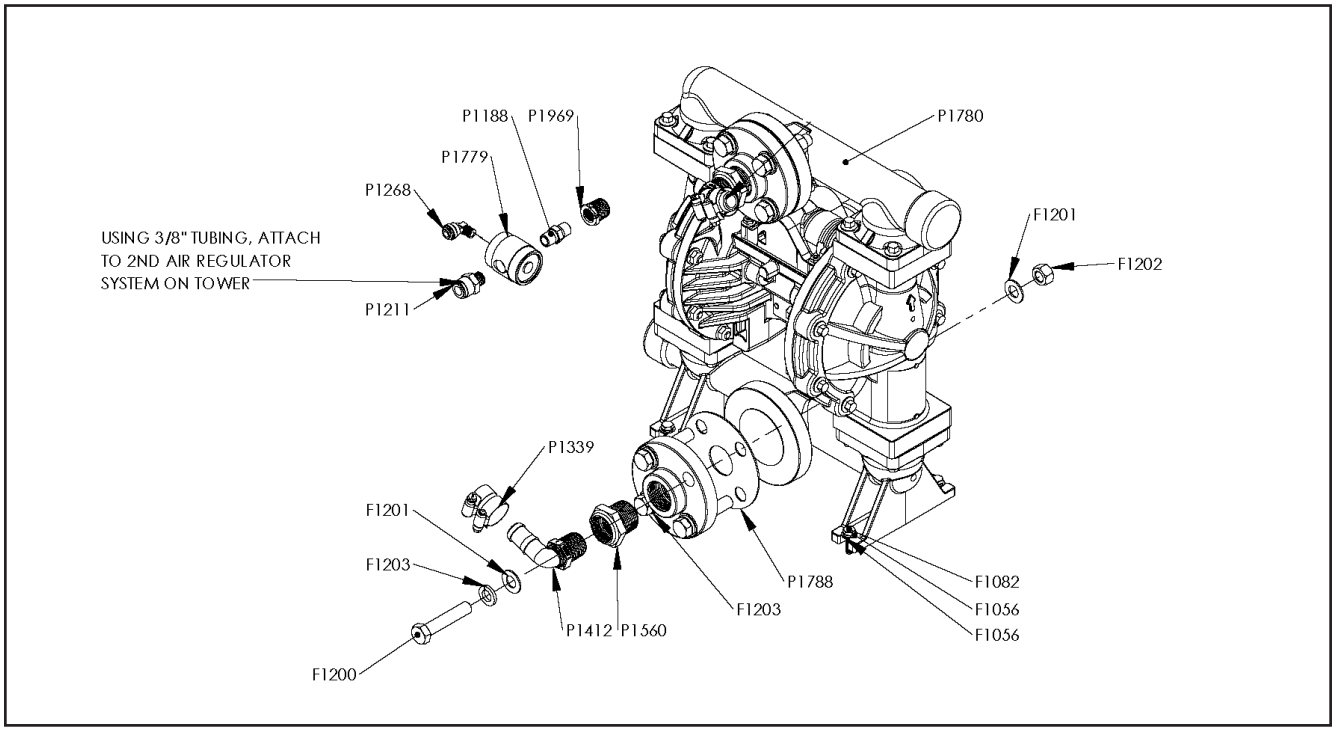
- Test function of air pressure switch

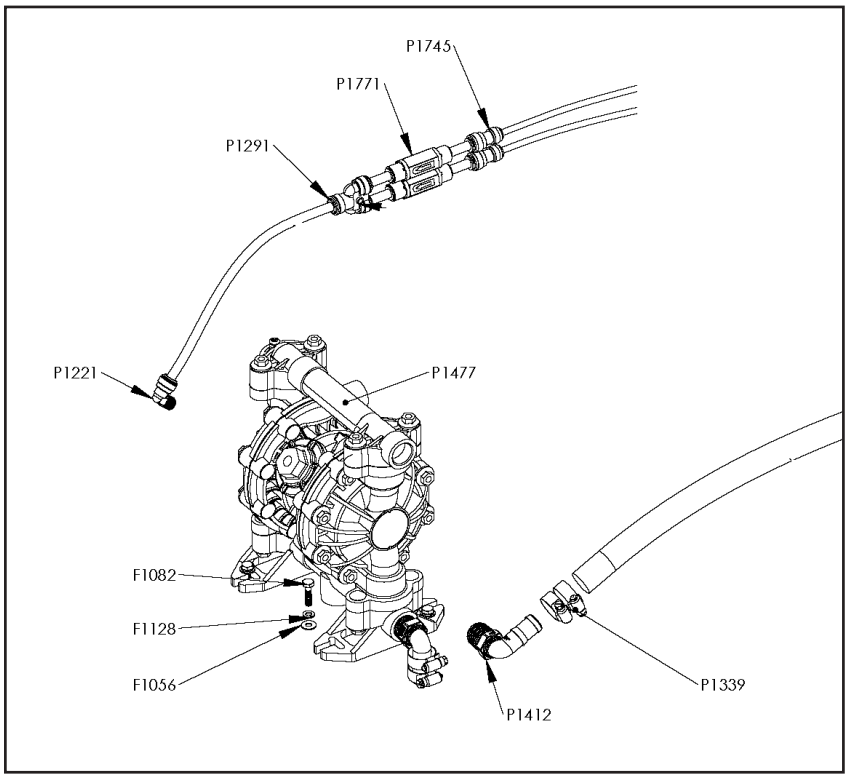
Appendix A - Parts Callout

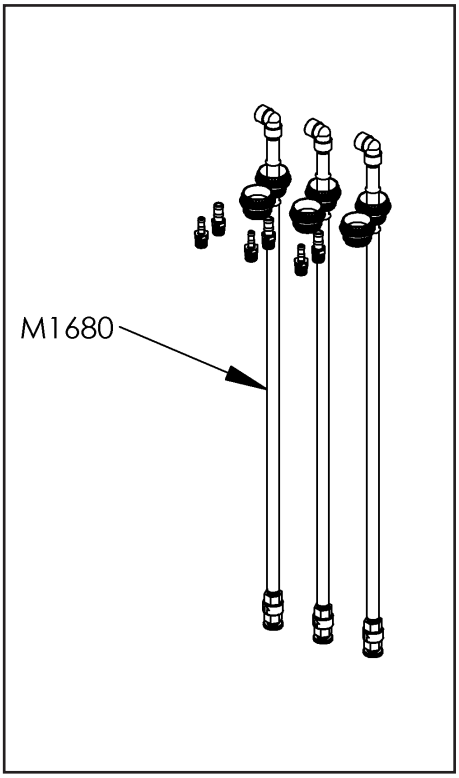




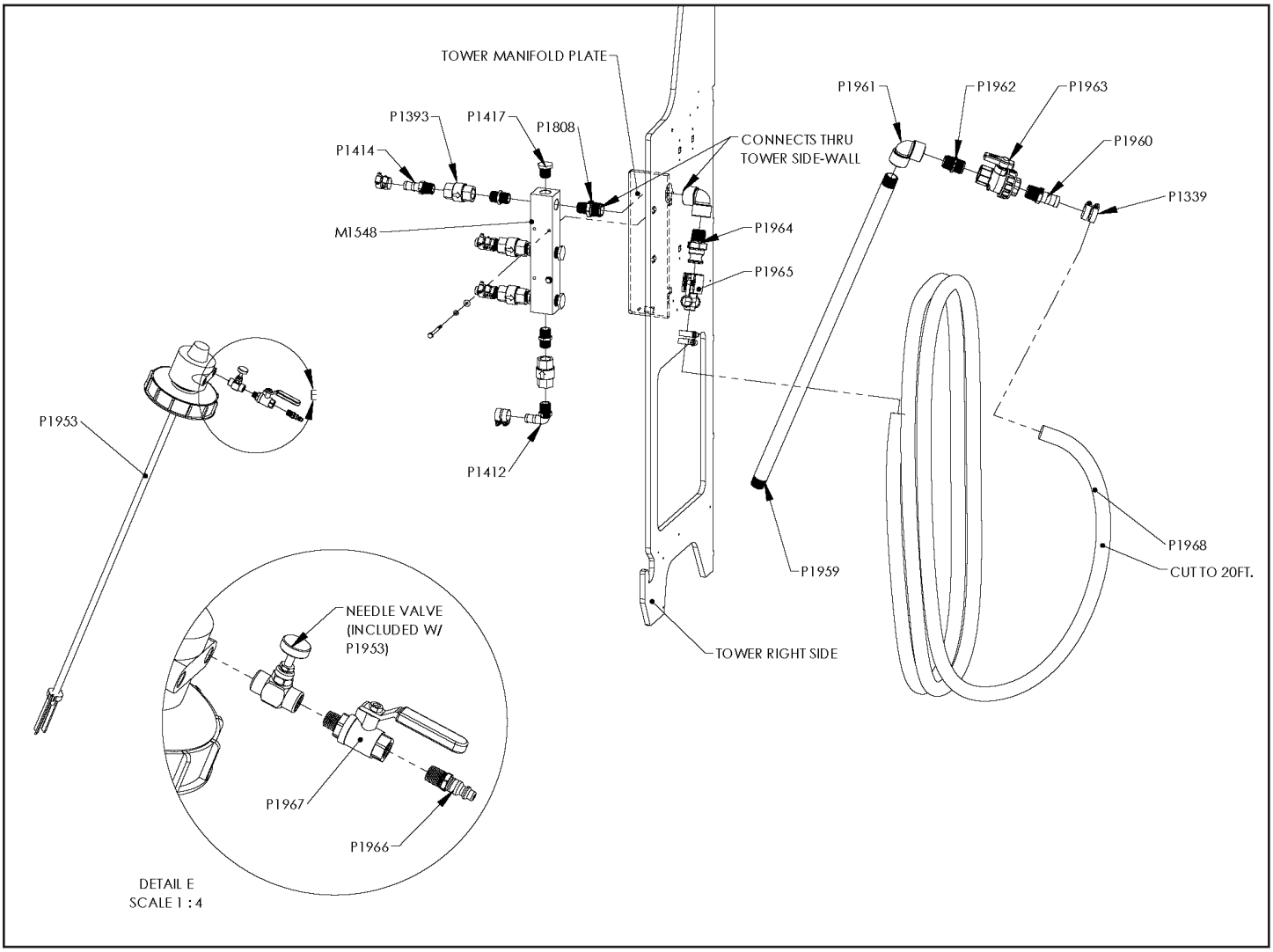
Appendix A - Parts Callout







Appendix A - Parts Callout

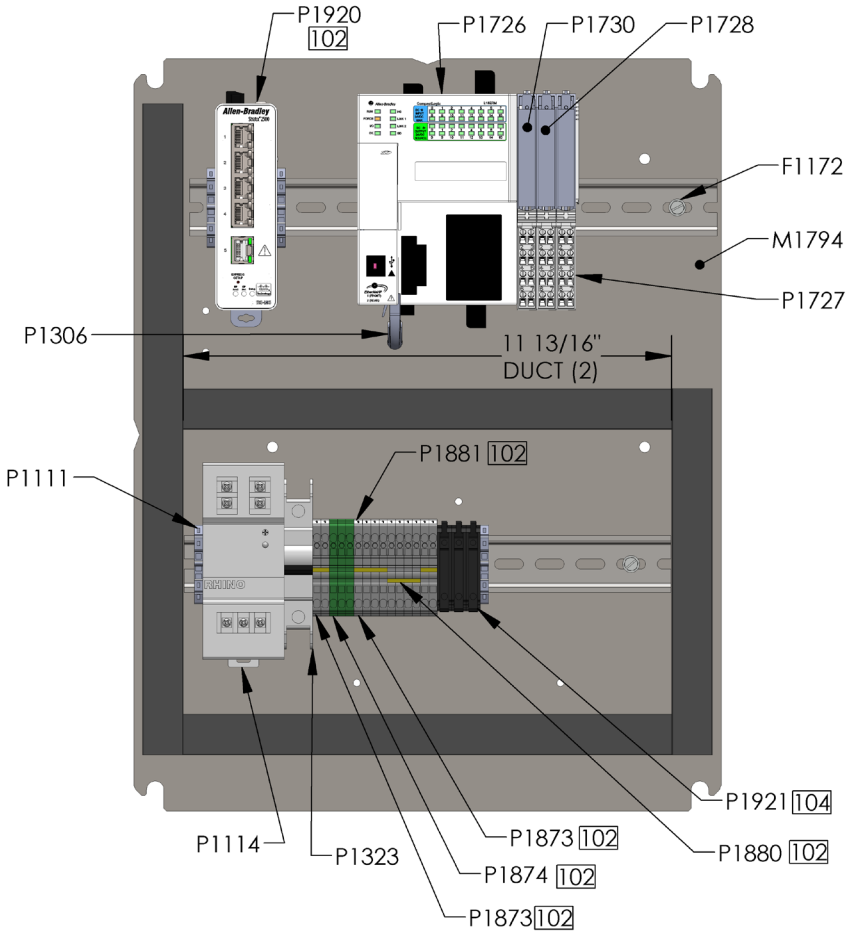


Appendix A - Parts Callout

Part No.	Description
F1030	BOLT HHC 1/4-20 X 2-3/4 SS
F1043	BOLT HHC 3/8-16 X 1-1/2 SS
F1056	WASHER 1/4 SS TYPE A
F1075	SCREW SELF TAP 10-16 X 12 TRUSS HD
F1082	BOLT HHC 1/4-20 X 1 SS
F1103	WASHER 3/8 SS
F1128	WASHER SPLIT LOCK 1/4 SS
F1200	BOLT HHC 1/2-13 X 2-1/2 316SS
F1201	WASHER 1/2 X 1 316SS
F1202	NUT HEX 1/2-13 316SS
F1203	WASHER SPLIT LOCK 1/2 316SS
M1521	REGULATOR BRACKET R38
M1548	MANIFOLD 3/4" 6-PORT POLYPRO
M1680	SUCTION WAND KIT - TOTE/DRUM
M1796	RDS MKII SOLENOID ASSEMBLY
M1943	TOTE BLENDER CONTROLLER ASSEMBLY
M1944	TOTE MIXER TOWER
M1946	TOTE MIXER TOWER SHIELD ASSEMBLY
P1188	PIPE HEX NIPPLE 1/4 SS
P1202	QUICK FIT ELBOW 3/8 NPT X 3/8" TUBE
P1211	QUICK FIT 1/4 NPT X 3/8 TUBE
P1214	QUICK FIT 3/8" T JOINT POLYPRO
P1219	QUICK FIT 3/8 NPT X 3/8 TUBE
P1221	QUICK FIT ELBOW 1/4" NPT x 3/8" TUBE
P1252	PIPE PLUG 1/4" NPT SOCKET HD SS
P1268	QUICK FIT ELBOW 1/8 NPT X 1/4" TUBE
P1271	3/8" OD POLYETHYLENE TUBING - NATURAL
P1291	QUICK FIT Y 3/8"
P1316	QUICK FIT PLUG 3/8"
P1330	HOSE - 3/4" CLEAR BRAIDED
P1339	HOSE CLAMP WORM GEAR SS - UP TO 3/4" HOSE
P1393	CHECK VALVE 3/4" HASTELLOY/VITON
P1412	PIPE ADAPTER HOSE BARB 3/4 X 3/4 X 90 PP

Part No.	Description
P1414	PIPE ADAPTER HOSE BARB 3/4 X 3/4 PP
P1416	PIPE HEX NIPPLE 3/4 POLY
P1417	PIPE PLUG 3/4 POLY
P1419	REGULATOR AIR 3/8"
P1477	HUSKY GRACO 515 PUMP 3/4"
P1484	NUT R38 REGULATOR MOUNTING
P1508	1/4" OD POLYETHYLENE TUBING - NATURAL
P1560	PIPE BUSHING 1" X 3/4" POLY
P1633	PIPE FLANGE 1" 4-BOLT POLYPRO
P1741	PRESSURE GAUGE 0-100psi 1/4 NPT SS CENTER BACK MOUNT
P1745	QUICK FIT REDUCER UNION 3/8" X 1/4"
P1771	CHECK VALVE, 3/8 QUICK FIT X 3/8 QUICK FIT
P1779	VALVE, AIR OPERATED 1/4" 3-WAY 316SS
P1780	PUMP, AODD, 1" CENTER FLANGE PP/PTFE
P1788	GASKET FOR 1" PIPE FLANGE PTFE 4-BOLT
P1808	PIPE HEX NIPPLE 1 INCH X 3/4 INCH BLACK PP
P1952	FLOOR SCALE, 5K LBS., 48" X 48", MILD STEEL, HERMETICALLY SEALED LOAD CELLS
P1953	MIXER, TOTE, 1.7HP 316L SS W/FOLDING BLADES
P1959	PIPE NIPPLE 1 X 36 PP
P1960	PIPE ADAPTER HOSE BARB 1 X 1 PP
P1961	PIPE ELBOW 1" PP
P1962	PIPE HEX NIPPLE 1" PP
P1963	VALVE, BALL, MANUAL 1" PP
P1964	CAM LEVER MALE 1" X 1" NPT MALE
P1965	CAM LEVER FEMALE 1" X 1" BARB
P1966	PIPE FITTING .250 QUICK DISCONNECT MALE X .250 MALE NPT BRASS
P1967	VALVE, BALL, MANUAL .250 MALE-FEMALE BRASS
P1968	CLEAR/GREEN PVC SUCTION HOSE
P1969	PIPE BUSHING 1/2 X 1/4 316SS
RDS-SOL-14	RDS SOLENOID KIT - FOR CONTROLLING 14 TOTAL DISPENSE PUMPS AND DELIVERY VALVES

Appendix A - Parts Callout



Part No.	Description
F1172	SCREW THEAD FORMING 10-32 X 1/2 HEX WASHER HEAD ZINC
P1111	END STOP TERMINAL BLOCK
P1114	POWER SUPPLY 24V 120W
P1147	CORD GRIP 1/2 NPT X .170 - .450 BLK
P1148	CORD GRIP NUT 1/2 NPS NYL
P1169	DIN RAIL 35mm X 325mm LONG
P1169	DIN RAIL 35mm X 300mm LONG
P1172	WIRE DUCT 25X60 X 300mm LONG
P1172	WIRE DUCT 25X60 X 400mm LONG
P1172	WIRE DUCT 25X60 X 225mm LONG
P1184	CORD GRIP 1/2 NPT X .095-.260 BLK
P1246	LABEL DANGER ELECTRICAL
P1288	POWER CORD 18-3 SO 5-15P
P1306	5E RIGHT ANGLE PATCH CABLE STRAIGHT/RIGHT ANGLE RIGHT BLACK 2 FEET
P1323	CIRCUIT BREAKER 10A SINGLE POLE
P1441	FUSE 250VAC 2A 5X20

Part No.	Description
P1468	CABLE RJ45 30ft BLACK
P1469	CORD GRIP 1/2 NPT X .210-.330 BLK SPLIT GLAND
P1705	VAPOR CAPSULE FOR ENCLOSURES
P1712	VENT PLUG 1/2" NPT BLK
P1726	PLC ALLEN BRADLEY COMPACTLOGIX 1769-L18ER-BB1B
P1727	TERMINAL BLOCK ALLEN BRADLEY POINT IO 1734-TB
P1728	OUTPUT MODULE 8 DIGITAL ALLEN BRADLEY POINT IO 1734-OB8
P1730	STRAIN GAUGE MODULE 2-CHANNEL POINT IO
P1813	CABLE TIE HOLDER
P1873	TERMINAL BLOCK SPRING CLAMP 5.1mm GRAY
P1874	TERMINAL BLOCK SPRING CLAMP 5.1mm GROUND
P1880	TERMINAL JUMPER 5.1mm - 10 POSITION CUT TO 2
P1880	TERMINAL JUMPER 5.1mm - 10 POSITION CUT TO 4
P1881	TERMINAL BLOCK LABEL 5.1mm NUMBERS 1-10, 20 SETS/CARD
P1911	PC, PANEL MOUNT, 12.1 INCH, 1.8GHZ, 4GB RAM, 32GB MLC
P1920	ETHERNET SWITCH, ALLEN BRADLEY STRATIX 2500, LIGHTLY MANAGED WITH 5X10/100BaseT, 1783-LMS5
P1921	FUSE HOLDER 5mm DIN RAIL MOUNT A-B 1492

Appendix B - Electrical Schematic