ZycoTherm Pump
User Manual

In-Line Blend Pump

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ZycoTherm

In-Line Blend Pump
Install & User Manual

Plan a suitable location for the pump and the ZycoTherm material tote. The In-Line Blend Pump should be located within 15 feet of the injection site, the closer the better. Typical injection location of material is in the AC strainer before the AC Pump. Because this is the suction side of the system this alleviates any potential back pressures into the Blend Pump and causes the greatest amount of mix time to properly blend into the AC. The separate control box should be placed inside the control house.

The Blend Pump requires 120VAC on a 20amp circuit. It is recommended to hard wire the pump. In addition to power, the pump also requires a cable run from the Control House to the pump location. This cable is for communication, and CAT5 Ethernet cable is typical because it is easy to find. **CAT5 cable not supplied with pump.**
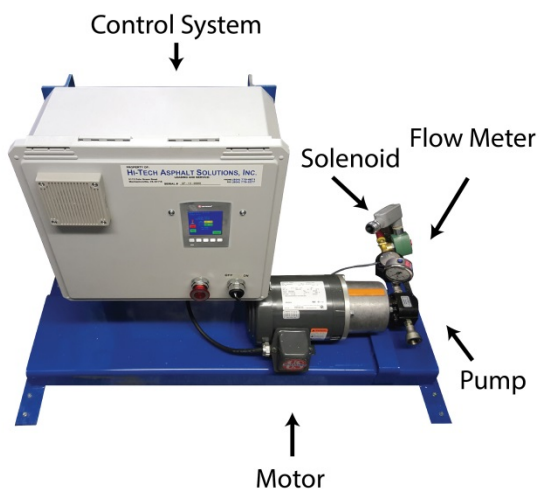

Pump & Control System

Pump House Control Box

1.) Run the CAT5 from the electrical box at the pump to the control box located in the control house. Insert the communication wires from the CAT5 cable into the Green 5 Pin Connector and insert it on the top of the Touch screen. You will wire both the touch screen at the pump and the touch screen in the control house with the CAT5 cable the same way. Take care to leave the resistor and any existing wiring in place. Unused wires from the CAT5 can be cut or taped back. **NOTE: incorrect wire placement can burn the resistor.**
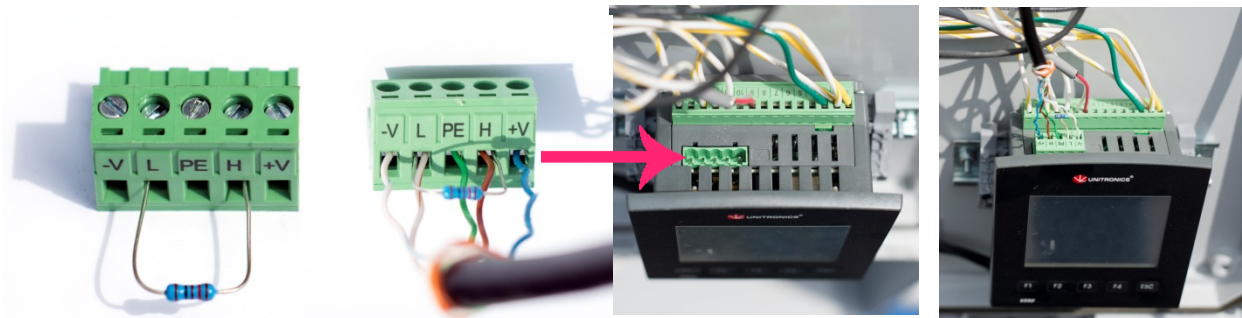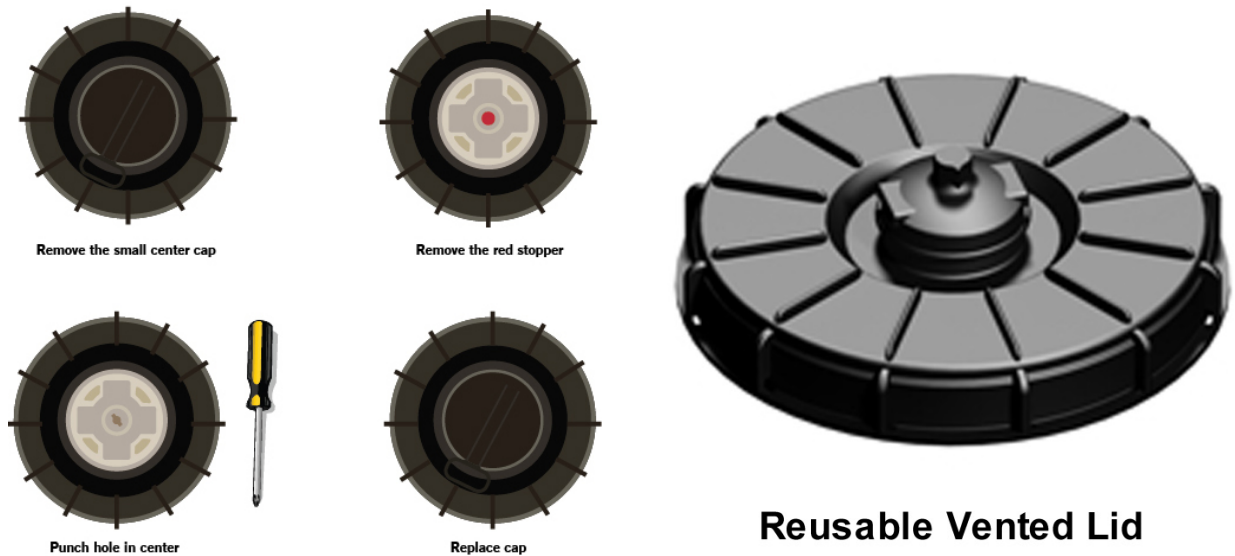

+V – Blue wire
H – Brown wire
PE – Green wire
L – White wire with Brown stripe
-V – White wire with Blue Stripe

2.) Plug in or hard wire the pump power.

3.) Turn on the pump electrical box and the control box in the control house and look for a green "Comm" in the upper right corner of the touch screen. If red "No Comm" is showing there is no communications between the pump and the controller, and wiring should be checked.

4.) Connect supply hose (yellow) to material Tote using supplied connectors. The plastic male cam-lock should be transferred from old tote to new tote when replacing the material totes.

5.) Remove Center Cap from top of material tote. Pull rubber plug, punch out center plastic piece with #2 philips screwdriver and place rubber plug back. A reusable vented cap may also be purchased and can help keep moisture out of the product.

Remove the small center cap

Remove the red stopper

Punch hole in center

Replace cap

Reusable Vented Lid

Prime and Calibrate

6.) The pump must be primed prior to being put into service. This is to fill the hose with product and to displace any air that may be in the lines. Attach the quick connect with ball valve on the end of the red hose and place it just inside the tote. **This is for initial priming only and needs only to be done at install.**
NOTE: these are NO FLOW quick disconnects. Without mating them together no flow will occur and will likely result in pump damage.

After prime and calibrate, close the Tote lid and place Ball Valve onto the Injection site.

Prime and Calibrate should be done at the pump.

Cut off metal straps and unscrew the lid.

With the pump power on and the installation section complete the output hose should be in the top of the Tote with the ball valve or at least the mating quick disconnect, connected.

Controller Calibration

The Touch Screen ------ all <mark>highlighted</mark> items are buttons on the touch screen

Press <mark>Settings</mark>, <mark>Calibration</mark>

Press <mark>PID ON</mark> --- This will change to <mark>PID OFF</mark>

Press to the right of <u>VFD%</u> and type in 100 and Press enter

Press <mark>Back</mark>

Set <u>Start Delay</u> to 0

Set <u>Time out of Tolerance</u> to 0

Press <mark>Back</mark>

Set all options to a typical plant run. Ideally <u>Target Flow Rate</u> should be greater than 0.04

Press <mark>Start</mark>

Flow should begin shortly. Do not run for more than 3 min.

Once Steady flow is achieved

Press <mark>Stop</mark> ----- same location as start

Press <mark>Settings</mark>, <mark>Calibration</mark>

Press to the right of <u>VFD%</u> and type in 50 and Press enter

Press <mark>PID OFF</mark> --- This will change to <mark>PID ON</mark>

Press <mark>Auto Tune?</mark> --- This will change to <mark>Auto Tune On Next Run</mark>

Press <mark>Back</mark>, <mark>Back</mark>, <mark>Start</mark>

The frequency drive will go from 0 to 60 several times.

Once the Flow rate stabilizes (Less than 5 min on average) the Pump can be stopped and connected as a typical run would be. Close the Tote lid and place Ball Valve onto the Injection site.

Running Screen
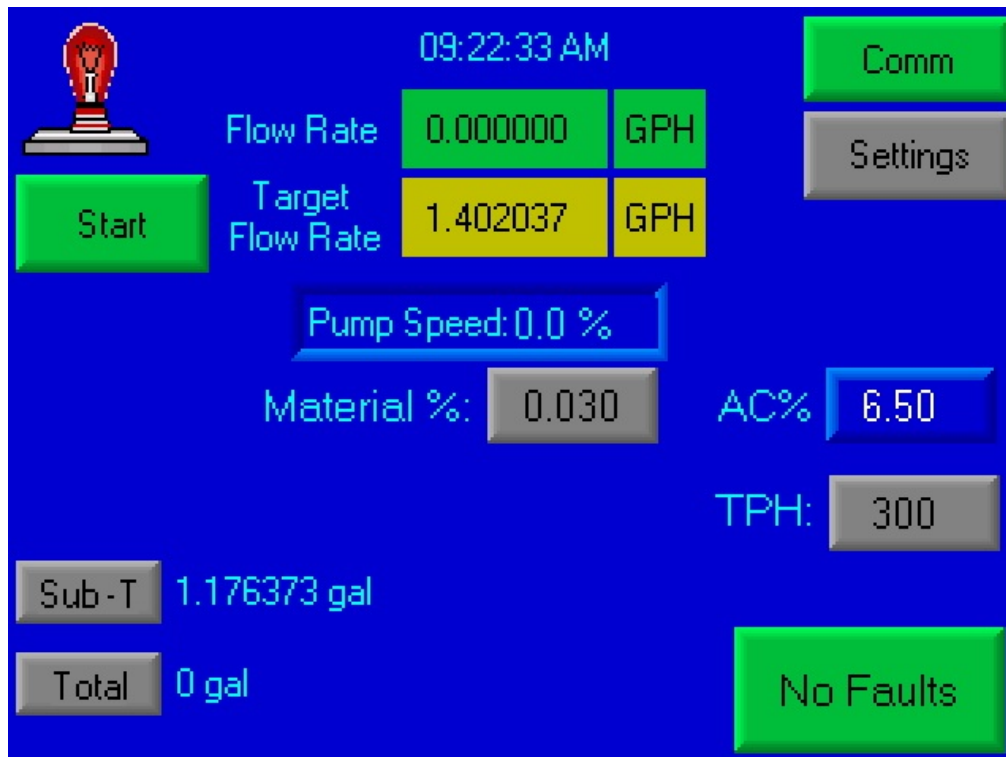
This is the Running Screen. From this screen you can start a run, navigate to the settings menu, view faults, and see information about the current run.

START - This button will begin a run and start the timer. Once pressed will change to STOP, and once the timer has ended the Red light above will turn green indicating pump is in motion.

COMM - This button indicates if there is communication between the pump and the controller. If it says NO COMM then there is no communication between the pump and the controller.

SETTINGS - This button will take you to the settings menu.

FLOW RATE - Indicates the current flow rate of a run. It will constantly adjust depending on the liquid moving through the pump.

TARGET FLOW RATE - This is the target flow rate derived from the material %, TPH, and AC% - These parameters must all be inputted manually. When an Analog signal is present either Plant TPH or AC TPH can be tracked depending on setup - see Tie-In Options for details.**PUMP SPEED** - This is the output % that the controller is sending to the pump. This will constantly adjust depending on the current flow rate and need.

MATERIAL % - This is the percentage of ZycoTherm to be added to the AC.

AC% - Your AC% is manually typed in. This button may alternatively say "**AC TPH**" if an analog signal is connected. **AC TPH** can only be achieved using an analog signal from the plant and can not be manually entered from this screen.

THP – This button is the plant Tons Per Hour target. It can either be manually entered here or entered through the use of an analog signal with proper setup. It is recommended to set up the analog signal to represent the **AC TPH** and not use the manual option.

SUB – T & TOTAL – This is a running tally of the material that has been run. They can be set independently depending on the needs of the plant.

NO FAULTS – This button will indicate if there are any faults with the pump. Faults include: High/Low/No Flow – Drive Fault – E-Stop @ Pump – E-Stop @ Control – No Disk @ Pump – and Replace Tote. All warnings will turn this button red with Yellow lettering describing the warning.

Settings Screen

TOLERANCE – This button shows the percent allowance of tolerance before the audio alarm will begin to count down.

TIME OUT OF TOLERANCE - Shows the amount of time out of tolerance before the audio alarm will sound.

VOLUMES – This button can be set to gallons or liters. When it is set to gallons, all math will use U.S. tons in the equations. When it is set to liters, all math will use metric tonnes for factoring equations. All targets and flow rates will also be reflected as either the selected gallons or liters.

FLOW RATE PER – This button can toggle between a rate of Gallons per hour/Liters per hour and Gallons per minute/Liters per minute. Per hour or per minute will depend on the volume selected and the calculated time needed to run the volume.

START DELAY – This button will allow you to set the delay of the start of the pump in seconds once the start button has been pressed (Zero is an option). When you press START from the RUNNING SCREEN this timer will count down before the pump actually begins. This is implemented so that if plant issues occur with the AC pump, the ZycoTherm pump will not turn on and off with every attempt of the AC pump.

CALIBRATION – This button is only available at the pump.
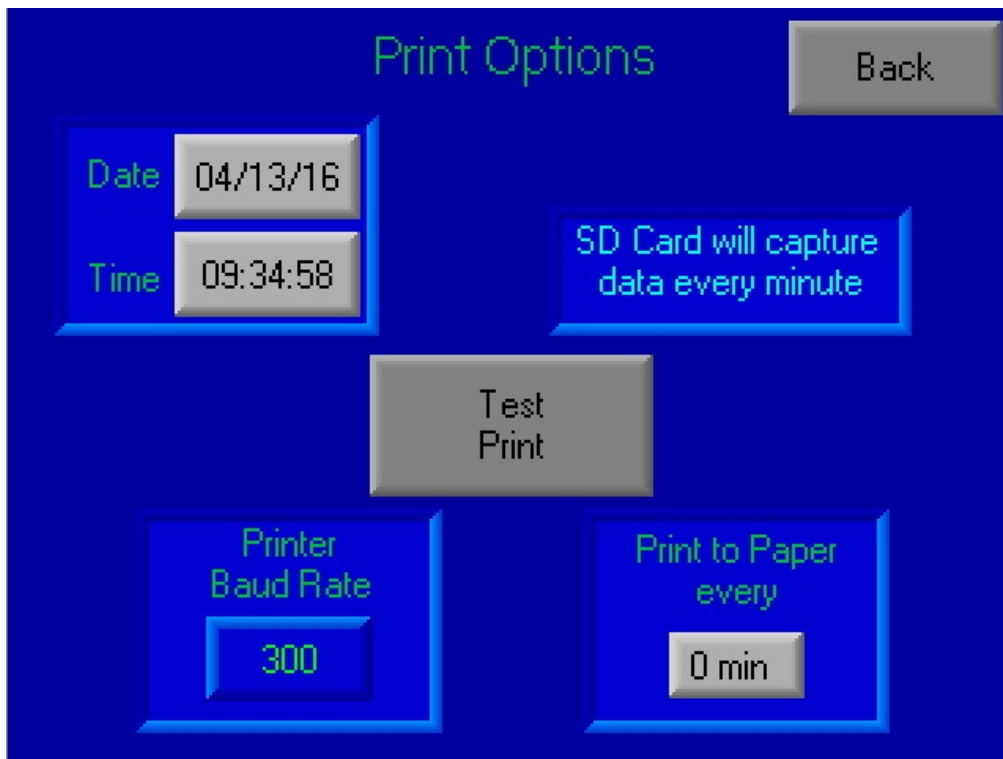
TIE IN OPTIONS SCREEN

NO ANALOG – ANALOG INPUT 4-20mA – ANALOG INPUT 0-10V – These are all the same button in the top left of the screen. You can press the button to cycle through the different options.

ANALOG SIGNAL REPRESENTS – This will determine what the analog signal represents. Either Plant Tons Per Hour or AC Flow Tons Per Hour. Press the button to cycle through the two options.

HOW LONG OUT OF TOLERANCE – Set in seconds, this button will allow you to adjust the number of seconds the pump can be out of tolerance before the "No Flow Output" is triggered.

The right hand side of this screen deals with the actual input of the analog signal. It displays the present voltage, voltage (0-10V), or current(4-20mA), and the representation of the signal. The linearization maximum can be adjusted to match up with what the plant displays as TPH or AC TPH. "Multi point" button will let you into an advanced method of analog scaling.

Print Options Screen

This is the Print Options screen. It will allow you to adjust the printing options for reports should you have a printer attached.

You can set the date and time here, set how often a report will be printed, and print a test print to make sure the printer is working.

BAUD RATE – This is the rate at which the controller communicates with the external printer. The rate on the controller must match the rate on the printer to obtain a readable printout. The controller can communicate with any printer through a serial RS232. Please note that all reports and information are also being sent to the micro SD card at the rear of the touch screen. This information will be recorded on the SD card with or without a printer attached. By default it will record to the SD card in one minute intervals.

Tote Screen

This is the Tote Screen – From here you can change the number of gallons per tote (Totes are shipped by default with 264 gallons of product)

You can adjust the percentage at which the pump will alert you when your tote is getting low. Once your tote has reached this level, an alarm will sound after each run until the tote is changed and reset.

You can turn the audio warning alarm on or off here.

When a new tote is installed you will need to reset the counter so that the system can keep track of how much product has been used and how much is left.
This screen is where you will reset the counter when a new tote has been installed.

Pump Only Calibration Screen

VFD % - Here you can manually input how fast to run the pump. If the pump is already running when you adjust the % it will immediately be overridden by the PID.

PID ON – **PID OFF** - Turns the PID on and off. The PID is what controls the speed of the pump depending on need. This should only be turned off when first installed and attempting to prime.

AUTO TUNE? – AUTO TUNE ON NEXT RUN – This will allow the PID to self-adjust its settings to get the best possible flow rate. Should only be done at factory and at plant installation.