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1. Warranty

PressureTech warrants that within 12 months from original shipment, if its products are operated by the original specified user: PressureTech will repair or replace, at its option, free of charge except freight, FOB shipping point, any parts it finds nonconforming on these conditions:

a. On request, user promptly allows seller to inspect, and user returns all requested parts to PressureTech's plant.
b. User has operated and maintained products in accordance with PressureTech's maintenance and operational literature and good business practice.
c. Products have not been misused, abused, damaged by accident or altered without PressureTech's written consent.
d. User employs trained maintenance and operating personnel.
e. Buyer meets all payment obligations.

PressureTech warrants products manufactured by others to the extent warranted by their original manufacturers, on these conditions. Parts, which have expected life shorter than one year under normal usage, are excluded. USED PRODUCTS ARE SOLD AS IS. PRESSURETECH MAKES NO WARRANTY FOR USED PRODUCTS EXCEPT AS TO TITLE. BUYER MAY INSPECT AND TEST BEFORE SHIPMENT AND ACCEPTS USED PRODUCTS ON THESE TERMS.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER WRITTEN, ORAL, OR IMPLIED, (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE).

2. Acronyms and Terminology

Bar	A measurement of pressure or vacuum exerted upon a given area
cSt	Centi-stroke; a measure of the fluids resistance to flow and shear under the forces of gravity
gpm	Gallons per minute; a unit to measure the volume of material per specific time
HMI	Human machine interface; this device provides a means for an operator to communicate with the PLC
HP	Horse power; a unit to measure power
PLC	Programmable logic controller
psi	Pounds per square inch; a measurement of pressure exerted upon a given area
rpm	Revolutions per minute; a unit to measure the rate at which an object is rotating
VAC	Volts alternating current
VDC	Volts direct current
VFD	Variable frequency drive

3. Standard Features

3.1 Specifications

Component	**PT-1000**	**PT-2000**
Main Motor	5 HP	7.5 HP
Voltage	208/460 VAC 3-Phase	208/460 VAC 3-Phase
Control Power	24VDC	24VDC
Number of Outlet Ports	4 or 8	4 or 8
Outlet Pressure	0-1000 psi	0-2000 psi
Flow Rate	8 gpm	5 gpm
OEM Filter	5 microns	5 microns

4. Installation Requirements and Considerations

4.1 The PressureTech High Pressure Pump requires a dedicated line.

4.1.1 A qualified technician must perform the connection to power.

4.2 Uncrate the PressureTech High Pressure Pump and inspect for damage.

4.2.1 If damage is found contact PressureTech immediately.

4.3 The unit should be installed in a location where there is access to the electrical panel and filter units as they will need to be accessed during routine preventative maintenance.

5. Safety Instructions

5.1 Make sure electrical power is disconnected before servicing pressure pump or electrical cabinet.

5.2 Do not remove any cover while the system is under electrical power.

5.3 Replace all covers before applying power to the system.

5.4 Do not move high pressure pump while it is powered.

5.5 For maintenance purposes, use only parts provided or recommended by PressureTech Corporation.

5.6 In case of emergency with either the pump or machine, press the E-Stop (Emergency Stop) button on the CNC machine or Pump Unit and disconnect power by shutting off the main circuit breaker (CB1) on the high-pressure pump. Pressing the E-Stop will alarm-out the CNC machine as well.

5.7 Allow only qualified personnel to handle and service the high pressure pump system.

5.8 Make sure the high pressure pump is not making any erratic (unusual) noise during operation. Inspect for any signs of leakage around the pump area.

5.9 Inspect all hydraulic hoses for tightness and leaks.

5.10 Make sure that the filter vessel covers are latched tight and secure.

5.11 High pressure pump system is not provided with coolant flow switch; we rely on machine coolant protection to ensure the pump is not running dry without coolant oil or fluid.

5.12 Always ensure there is enough oil in the machine oil reservoir and high pressure pump filter vessel. Refill the oil tank as necessary.

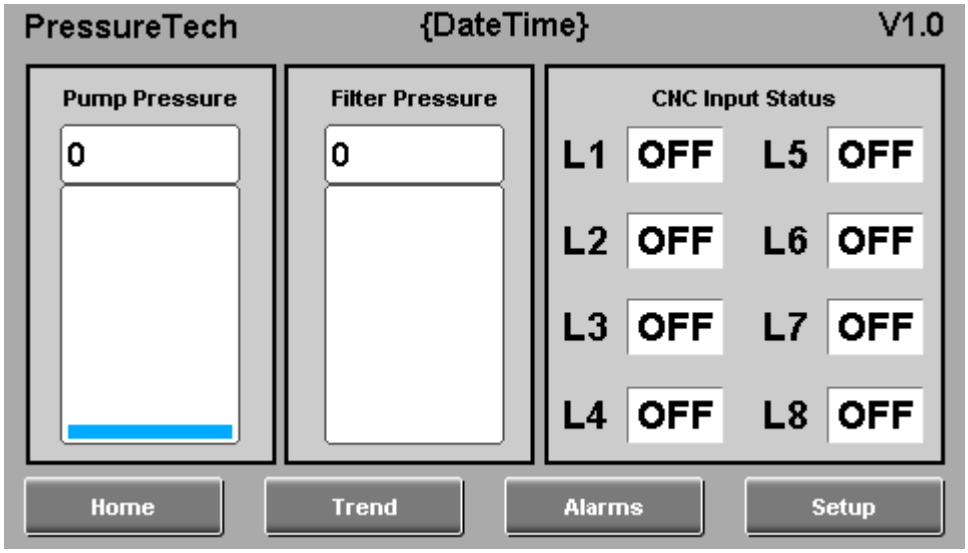
5.13 Under no circumstances should anyone come in the way of high pressure coolant streams.

5.14 Never install shut-off valves between the pump and discharge pressure regulators, or in the regulator bypass lines.

5.15 PressureTech disclaims all responsibility for possible accidents and/or property damage cause when safety instructions are not followed.

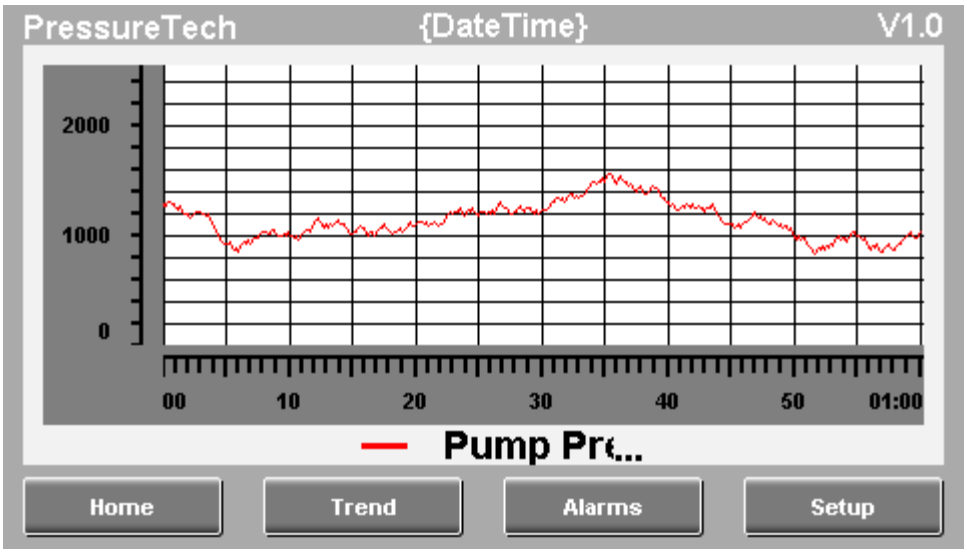
6. HMI Navigation

6.1 Main



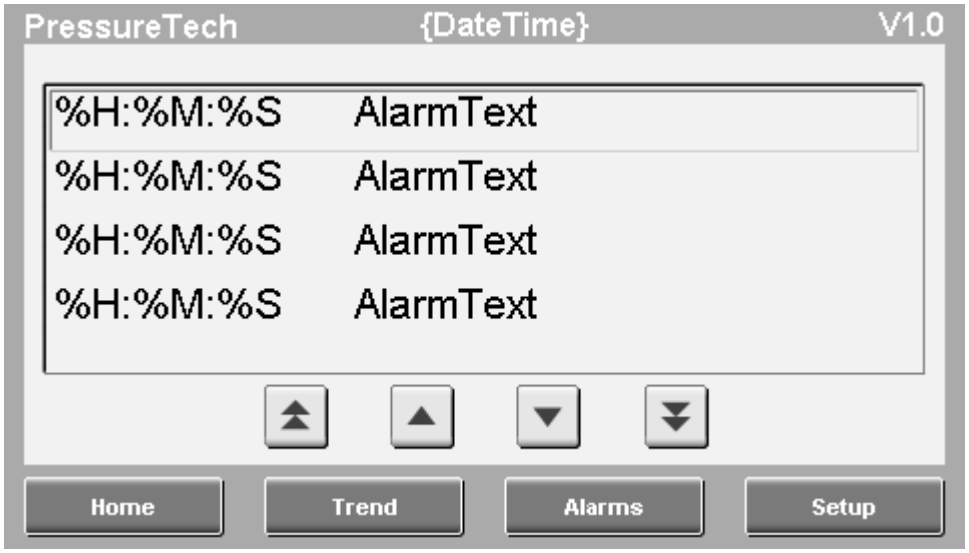
Item	Name	Function
1:	Pump Pressure	Displays the current outlet pressure from the pump in either PSI or BAR depending on the value of parameter 106
2:	Filter Pressure	Displays the current filter pressure in either PSI or BAR depending on the value of parameter 106
3:	CNC Input Status	Displays the status of the CNC inputs wired to inputs 0…7

6.2 Pump Pressure Trend



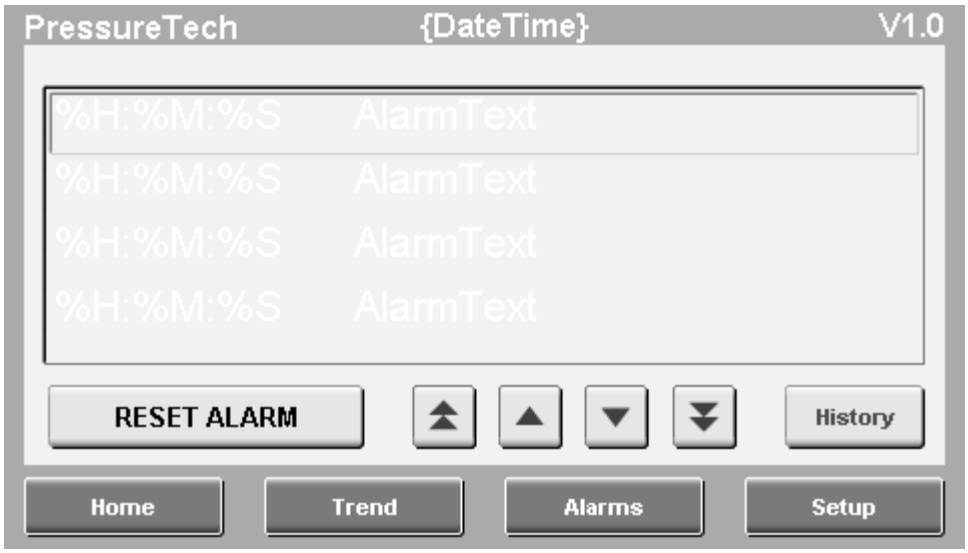
Item	Name	Function
1:	High Pressure Tend	Displays a graph of the high pressure of the pump for the last 60 seconds

6.3 Alarm History



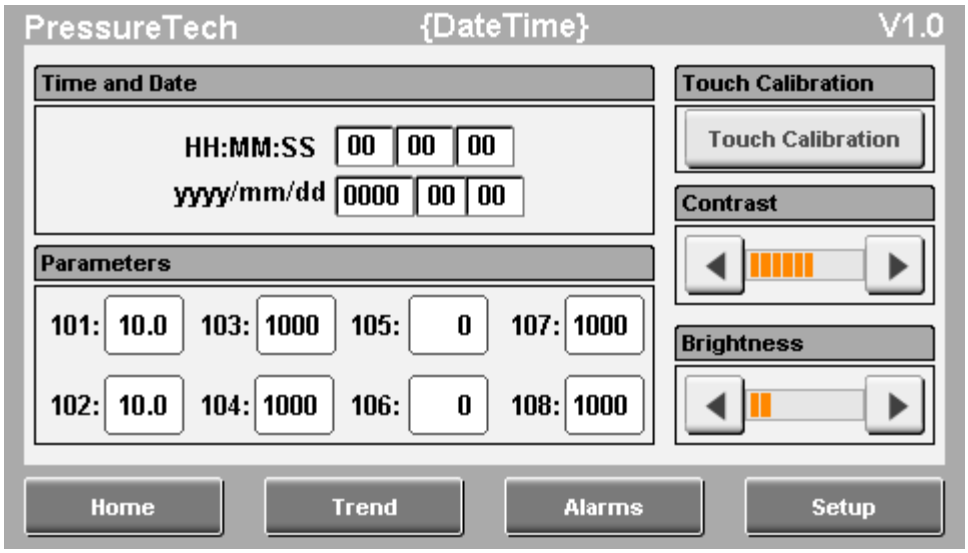
Item	Name	Function
1:	Alarm Display	Displays the test associated with an alarm or warning that has occurred
2:	Alarm Page Navigation	Use these buttons to navigate through all displayed alarms

6.4 Alarms



Item	Name	Function
1:	Alarm Display	Displays the test associated with an alarm or warning that has occurred
2:	Alarm Reset	Pressing this button will acknowledge the alarms. Only press this after the alarm has been resolved. Pressing this button previous to clearing the root cause will not clear the alarm from the screen
3:	Alarm Page Navigation	Use these buttons to navigate through all displayed alarms
4:	History Button	Pressing this button takes you to the alarm history page

6.5 Setup



Item	Name	Function
1:	Date/Time	Set the current date/time by pressing each item
2:	Parameters	Set the values for parameters 101…108
3:	Touch Calibration	Pressing this will enable you to recalibrate the touch screen
4:	Contrast	Use these buttons to adjust the contrast of the screen
5:	Brightness	Use these buttons to adjust the brightness of the screen

7. Startup and Operation

7.1 Before powering on the high pressure pump, ensure that the CNC machine is not currently running, and that the flood coolant pump is turned off.

7.1.1 The high pressure pump runs a self-calibration upon startup and increased pressure from the CNC machine can disrupt this procedure.

7.2 Power on the system by turning the disconnect switch to the ON position.

7.3 Watch the HMI for illumination.

7.4 At powerup the boot screen will appear followed by the PressureTech logo.

7.5 After 5 seconds the display should change to the Home screen. At this point the system is ready to be run.

7.6 When the input from the CNC machine is received, the corresponding valve will open.

7.6.1 Example: Input 1 is turned ON valve 1 will open, Input 2 is turned ON valve 2 will open and so on.

7.7 After the pump delay time set in parameter XXX has expired the pump will turn on.

7.8 After all the inputs from the CNC machine are turned off, the pump will turn off.

7.9 The valves will remain open until the delay time set in parameter XXX has expired at which time the valves will close.

7.10 To power down the system make sure the CNC is not calling for high pressure. Once confirmed, turn the disconnect switch to the OFF position. The HMI should turn off.

8. Parameters

8.1 Parameter List

Number	Name	Description	Default	Range
101	Pump On Delay	The time entered (in seconds) is the time that the pump will delay turning on after the valve is turned on	0.5	0.0 … 10.0
102	Valve Close Delay	The time entered (in seconds) is the time that the valves will delay closing after the pump is turned off	2.0	0.0 … 10.0
103	High Pressure Setpoint	The pressure entered (in PSI) is the pressure that the pump will alarm if the pump outlet pressure exceeds this value	2500	0 … 9999
104	Continuous Run Turn Off Timer	The time entered (in seconds) is the amount of time that the unit will be allowed to continuously run before timing our and triggering an alarm	1800	0 … 9999
105	Pressure Units	Change the units that the pressures will display on the HMI	0: PSI	1: Bar
106	Oil Cooler Option	Enable the functionality/alarming of the oil cooling unit	0: Not Installed	1: Installed
107	Fan Off Delay	The time entered (in seconds) is the time that the cooling fan will run after the pump is turned off	120	0.0 … 30
108	Reserved for Future Use	Reserved for Future Use		

9. Alarming

9.1 After an alarm has occurred the HMI will automatically change to the Alarms screen. Displayed will be the alarm that occurred.

9.2 Users then need to rectify the issue.

9.3 After correcting the issues, press the reset button.

9.4 Alarm List

Number	Name	Cause	Resolution
101	E-Stop Pressed	The E-Stop pushbutton on the unit is pressed	Release the E-Stop on the unit
102	Pump High Pressure	The pump pressure has exceeded the allowable threshold input into parameter 103	Check to make sure there are no blockages in the fluid path; ensure that parameter 103 is not set too low for the application
103	Filter Under Vacuum	A vacuum has been detected in the filter vessel	Ensure that the CNC machine and flood coolant pump was not running when the pump was turned on; check that the filter bag is not full; check that fluid id present in the supply line
104	Continuous Run	The unit has run continuously for longer than the allowable time input into parameter 104	Put short breaks in the CNC program to allow the pump to rest; extend the time entered in to parameter 104
105	Pump Motor Circuit Protector Tripped	The circuit breaker for the pump motor has exceeded its allowable ampacity	Ensure that the pump motor is able to spin and not bound up; check incoming voltage source for irregularities; call PressureTech for replacement parts
106	Pump Contactor Malfunction	The pump is being told to run and is not running, or the pump is being told to stop running and is continuing to run	Call PressureTech for replacement parts
107	Booster Pump Motor Circuit Protector Tripped	The circuit breaker for the booster pump motor has exceeded its allowable ampacity	Ensure that the pump motor is able to spin and not bound up; check incoming voltage source for irregularities; call PressureTech for replacement parts

108	Booster Pump Contactor Malfunction	The booster pump is being told to run and is not running, or the pump is being told to stop running and is continuing to run	Call PressureTech for replacement parts
109	Cooling Fan Motor Circuit Protector Tripped	The circuit breaker for the cooling fan motor has exceeded its allowable ampacity	Ensure that the fan is able to spin and not bound up; check incoming voltage source for irregularities; call PressureTech for replacement parts
110	Cooling Fan Contactor Malfunction	The cooling fan is being told to run and is not running, or the pump is being told to stop running and is continuing to run	Call PressureTech for replacement parts
111	PLC Rack 1 Slot 1 Error	The PLC card located on rack 1 in slot 1 is malfunctioning	Reseat the card; Call PressureTech for replacement parts
112	PLC Rack 1 Slot 2 Error	The PLC card located on rack 1 in slot 1 is malfunctioning	Reseat the card; Call PressureTech for replacement parts
113	PLC Rack 1 Slot 3 Error	The PLC card located on rack 1 in slot 1 is malfunctioning	Reseat the card; Call PressureTech for replacement parts
114	PLC Rack 1 Slot 4 Error	The PLC card located on rack 1 in slot 1 is malfunctioning	Reseat the card; Call PressureTech for replacement parts
115	PLC Rack 1 Slot 5 Error	The PLC card located on rack 1 in slot 1 is malfunctioning	Reseat the card; Call PressureTech for replacement parts
116	Valve Block IO Error	The IO block for the valve outputs is malfunctioning	Reseat the attached cables; Call PressureTech for replacement parts
117	Oil Cooler IO Block Error	The IO block for the oil cooler is malfunctioning	Reseat the attached cables; Call PressureTech for replacement parts

10. Hydraulic Gear Pump

10.1 WARNING: Never install shut-off valves between the pump outlet and the discharge pressure regulator.

10.2 Working Liquid

10.2.1 Recommended oil viscosity from 50 to 100 mm^2/s (cSt) at 40°C.

10.2.2 It is not advised to mix oils as it is possible to decrease their ability to flow.

10.2.3 The duration of use depends on the working conditions and it is to be determined by the customer.

10.2.4 Acceptable operating oil temperature is between -20°C to 80°C.

10.2.5 Recommended filtration is 25µm or better.

10.3 Rotation

10.3.1 Clockwise or counterclockwise is determined as you look against the pump shaft according to the arrow marked on the front cover.

10.3.2 Incorrect rotation will cause damage to both the pump and seals.

10.4 Flow

10.4.1 Inlet and outlet ports are marked on the body.

10.5 Suction

10.5.1 The suction pipe needs to ensure a stable draw without air penetration.

10.5.2 Allowable suction under pressure is 0.203 Bar.

10.5.3 A pressure above 0.5 Bar will cause damage.

10.6 Drive

10.6.1 The drive linked directly with an elastic coupling that will ensure self-alignment.

10.7 Plumbing

10.7.1 The suction pipe should be hermetic in nature, with as short of length as possible

10.7.2 The pressure pipe should be as short in length as possible and have a minimum number of bends and transitions.

10.8 Tank

10.8.1 The volume and construction of the tank depend on working conditions.

10.8.2 It is necessary for the suction and pressure pipes to be mounted in such a way that the returning oil is not immediately sucked into the pump.

10.9 Operation

10.9.1 The pump delivered by us are developed and installed for flow rate and pressure described above.

10.9.2 They can be run immediately if the stated requirements are met.

10.9.3 The pump should be considered unserviceable if it cannot reach the displacement and pressure while observing all the stated conditions.

10.9.4 After three (3) minutes of running the temperature of the unit body should not reach a point where it is unbearable for the palm of the hand.

11. Maintenance

11.1 Maintenance Schedule

Interval	Item	Action
Daily	Filter Vessel	Before operation check the filter vessels for signs of leakage. Ensure that the lids are properly installed, and the hardware is tight and secure. After the pump has been in operation for an hour check again to make sure that nothing has changed.
	Hose Fittings	Before operation check the filter vessels for signs of leakage. Ensure that the hardware is tight and secure. After the pump has been in operation for an hour check again to make sure that nothing has changed.
Weekly	Main Coolant Tank	While both the CNC machine and High Pressure Pump are not running, clean the main coolant tank. Remove any chips or debris. Operating with a dirty tank can cause the filters to clog more often, or even fail and damage the unit.

11.2 Special Notes

11.2.1 During the operation of the pump, make sure that the coolant is not creating a lot of foam. If foaming does occur, contact your coolant supply company to get an additive that prevents foaming. Check and fill the machine tool reservoir as needed.

11.2.2 When turning the unit on frequently in your program, more than three times per minute, change your program such that you open another line and then turn off the previous line with an interval of at least two (2) seconds in between. This will keep the pump running consistently. Frequent starting and stopping will put unnecessary wear and tear on the unit.

11.2.3 Attention should be paid to the level of oil in the pump head. Running the pump unit with no oil in it will cause the pump to fail.