

**HP COOL TECH, INC.**

# *PowerPump*

**OPREATIONS MANUAL**

Series 10000/11000



Rev B 02/09/2015

## TABLE OF CONTENTS

Page	Topic
3	Introduction
3	Specifications
3	Warning
4	Safety
5	Use
6	Filter Replacement Procedure
7	Operator Use - Coolant Line / Tool Orientation Sheet
8, 9	Variable HMI Option

Please read and understand the contents of this manual prior to use of the HP Cool Tech High Pressure Coolant Pump. Failure to follow Safety and Checklist Instructions may result in damage to the unit, or injury to personnel.

## INTRODUCTION

We are proud to bring to market the HP Cool Tech, Inc high pressure coolant pump, a high pressure coolant delivery system.

The HP Cool Tech, Inc high pressure coolant pump was developed in a machine shop, by machinists, for use in the machine shop environment.

Their hands on experience has resulted in the design and development of a unit that solves "real world" problems and helps meet the demands of today's fast paced manufacturing environment.

The HP Cool Tech, Inc high pressure coolant pump will facilitate the processing of a variety of materials through the delivery of high pressure coolant at stable temperatures right to the contact point of tooling and material. Chips will be evacuated at a rapid rate which will permit the use of more aggressive feeds and speeds. This in turn will result in shorter cycle times, improved finishes and increased tool life.

### Specifications

Main Motor	7.5 HP
Voltage	208/230/460-3 Phase 60 HZ
Control Power	24 VDC
Feed Pressure	5-50 PSI
Fluid Type	Vascomill HD 22 or Equivalent
Output Ports	4/8
Output Pressure	Manual, Single Pressure 60-2000 PSI Electronic, Multi Pressure 60-2000 PSI
Flow Rate	Fixed Volume @ 7.6 GPM Variable Volume up to 7.8 GPM
Filter	5u
Dry Weight	600 LBS

### WARNING!!!

**This unit is designed to produce a flow of coolant at extremely high pressure! AS SUCH:**

- 1. All hoses must be secured to hold 2,000 lbs of pressure.**
- 2. All guards and safety features must be in place on machine.**  
**Coolant running at high pressure can cut or inject into the body.**
- 3. Safety glasses must be worn while using this equipment, High pressure oil can cause serious, permanent eye injury.**
- 4. Small pinholes must be repaired immediately as they have a potential to cause injury.**
- 5. Only trained personnel should operate, repair or maintain the DP Tech, Inc High pressure pump.**

# SAFETY

Warning to End User of the HP Cool Tech, Inc. high pressure coolant pump  
This system is designed to deliver coolant under high pressure to your machining process.  
Precautions must be taken to protect personnel and equipment.

1. The HP Cool Tech, Inc. high pressure coolant pump must be installed by qualified technicians
2. All machine doors must be in place with all safety locks in operating condition prior to operating the HP Cool Tech, Inc. high pressure coolant pump.
3. Certain oils can form a mist under high pressure operating conditions. This represents a potential fire hazard. Therefore, it is recommended that the machine be attended during operation or fire suppression equipment be installed.
4. Prior to operation it is recommended that any cracked or missing guards on the machine be replaced.
5. Chip guards and spindle caps must be in place prior to use of the HP Cool Tech, Inc. high pressure coolant pump.
6. Careful consideration must be given to oil line placement while using the HP Cool Tech, Inc. high pressure coolant pump as the high pressure can force fine chips into areas of the machine required to remain free of machining debris. (Collets, Guide Bushing, Collet Slots, etc)  
Regular maintenance of these areas should be performed to prevent excessive build up.
7. High voltage is present in the cabinet of the HP Cool Tech, Inc. high pressure coolant pump and should be serviced by qualified personnel only.
8. PRIOR TO the beginning of maintenance or repair of the HP Cool Tech, Inc. high pressure coolant pump, the assigned technician will:
  - A. Locate and render inoperative any energy providing sources to the equipment.  
These sources include, but are not limited to:
    - Electrical
    - Mechanical
    - Stored energy such as springs and air pressure
9. Due to the potential for mist / smoke to form under high pressure conditions, the use of mist control or air filtration device is recommended.

# USE

The unit is M-code driven

Alarms are designed to permit the user to anticipate low pressure conditions and perform maintenance prior to the unit shutting down the machine due to an E-Stop activation.

-A yellow indicator light on the pump cabinet notifies the operator the output filter pressure is dropping due to the filter bag accumulating chips. This condition should be corrected at this time. When the bag is changed, the indicator will not light again until the condition reoccurs.

-In the event a clogged filter bag significantly impedes the flow of coolant, the pump will activate an E-Stop condition and the red filter reset light will go on. The filter must be changed at this time. When the bag is changed the filter reset must be pushed to clear the alarm.

Other conditions that will alarm/E-Stop the machine.

- Thermal overload of pump motor
- Lack of air flow to the coolant unit
- Open machine cabinet door

LAMP	INDICATOR LAMP STATUS CONDITION	CAUSES/ACTION
Green	Pump is running	Normal operation
Yellow	Output filter pressure is below 5 PSI	Change filter media
Red Reset 1 Sec Flashing	Thermal Overload	Phase lose Short circuit Motor overload Reset thermal relay
Red Reset	Clogged filter	Change filter media Push reset button
Red Reset ½ Sec Flashing Alarm	High pressure below 60 PSI	Low coolant supply Clogged coolant supply line Damaged pump coupling Output exceeds capacity Low voltage Pressure set below 60 PSI Push reset button

## **Filter Replacement Procedure**

Periodically the filter bag and screen will require maintenance to ensure the optimum running condition of the HP Cool Tech, Inc. PowerPump. Change bag and clean filter as follows:

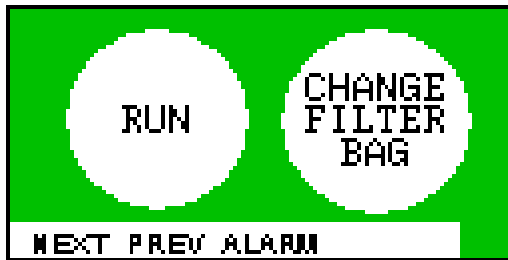
1. Power off Machine
2. Lock out Machine coolant pump
3. Lock out HP Cool Tech PowerPump
4. Open drain valve, allow oil to drain
5. ENSURE PRESSURE GAGES OF CANISTER READ "0" BEFORE PROCEEDING
6. Open canister filter top
7. Remove filter bag and basket, discard used filter bag
8. Thoroughly clean filter basket to remove all chips and fines
9. Clean inside canister to remove all chips and fines
10. Inspect O-ring on the filter basket, replace if damaged
11. Install new bag and basket in canister
12. Install filter hold down ring
13. Close canister and secure the cover with eyebolts
14. Unlock machine coolant pump and HP Cool Tech PowerPump
15. Manually activate machine flood coolant
16. Allow canister to fill with oil with drain valve open for several minutes
17. Close drain valve
18. Visually inspect system for leaks
19. In MDI mode, activate last coolant line (either 4th or 8th depending on configuration of your pump) This will ensure entire system is purged of chips / contamination.
20. Verify strong, steady oil through the sub spindle.
21. Check for leaks
22. Resume operation

## High Pressure Coolant Lines

M Code	Color Code	Tool
M204 ON	<b>YELLOW</b>	
M205 OFF		
M206 ON	<b>GREEN</b>	
M207 OFF		
M208 ON	<b>BLUE</b>	
M209 OFF		
M210 ON	<b>ORANGE</b>	
M211 OFF		
M212 ON	<b>RED</b>	
M213 OFF		
M214 ON	<b>PURPLE</b>	
M215 OFF		
M216 ON	<b>GRAY</b>	
M217 OFF		
M218 ON	<b>BLACK</b>	
M219 OFF		

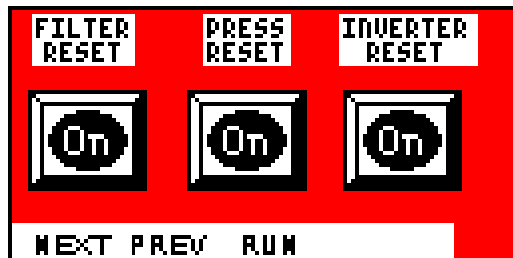
**OPERATOR NOTES:**


## VARIABLE HMI OPTION TOUCH SCREEN



“Run/Filter Warning” will display when the pump is running

“Change Filter Bag” on the HMI notifies the operator that the coolant pressure is dropping due to the filter bag accumulating chips. This condition should be corrected at this time. When the bag is changed, the indicator will not light again until the condition reoccurs.



“Filter Reset”. In the event a clogged filter bag significantly impedes the flow of coolant, the pump will activate an E-Stop condition and the “Filter Reset” light will go on. The filter **must** be changed at this time. When the bag is changed the filter reset must be pushed to clear the alarm.

“Press Reset” In the event of low pressure output, (below 50 PSI), the pump will activate and E-Stop condition and the “Press Reset” light will go on.

Causes:           Clogged coolant supply line  
                      Damaged pump coupling  
                      Volume output exceeds capacity  
                      Low voltage  
                      Pressure set below 50 PSI

Resolve the cause and press the “Press Reset” button.

“Inverter Reset” In the event of an inverter fault the pump will activate an E-Stop condition and the “Inverter Reset light will go on.

See the drive manual for the alarms. Resolve the condition and press the “Inverter Reset” button





Each port has a M-Code assigned.

Press the “Next” or “Prev” F key to scroll thru the screens.

Select the M-Code to set a pressure and touch the large block and a keyboard will appear.

Type in the desired pressure and press “ENT” key.

The pressure can be changed while the pump is running.