



11 - High Pressure Flood Coolant

Chip Removal and Coolant - Service Manual

11.1 HPFC OVERVIEW 11.2 HPFC INSTALLATION
11.3 HPFC TROUBLESHOOTING

1 - Chip and
Coolant -
Introduction

2 - Auxiliary
Coolant Filter

3 - Standard
Flood Coolant

4 - Oil Skimmer

5 - Programmable
Coolant

6 - Chip Auger

7 - Coolant Chiller

8 - Chip Conveyor
- UMC

9 - Chip Conveyor
- Lathe

10 - Coolant Refill

**11 - High
Pressure Flood
Coolant**

12 - Through-
Spindle Coolant

13 - Through-Tool
Air Blast

14 - Haas Chip Lift

15 - Mist
Condenser

16 - Coolant Level
Float Sensor

17 - Mini
Conveyor

18 - Coolant VFD

19 - Coolant
Sanitizer

20 - Chip
Separator

21 - Chip Tray
Strainer

11.1 HPFC - OVERVIEW

High-Pressure Flood Coolant

The number one cause of premature tool failure is re-cutting chips. Our High-Pressure Flood Pump delivers up to 45% more coolant to the cutting zone – at higher pressure – to flush out chips and swarf. High-volume, high-pressure coolant is delivered through our multi-nozzle flood coolant ring to maximize efficiency.

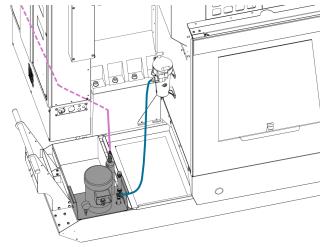
NOTE: This system is louder than the standard flood coolant system, due to the higher pressures involved, and the spur gear drive system. It is operating as expected.

11.2 HPFC - INSTALLATION

High Pressure Flood Coolant (HPFC) - Installation

AD0502

Introduction



This procedure will explain how to install the High Pressure Flood Coolant with TSC, TSC ready, and no TSC.

Prerequisites:

Software version 100.20.000.1010 will be required to run HPFC, please upgrade to this version if that has not already been done.

Note: The Auxiliary Filter can not be plumbed directly to the HPFC pump, it can only be plumbed to the TSC system.

This procedure applies to the **Mill** kits in the table below. Use the table to determine the correct upgrade kit needed.

UPGRADE TYPE	APPLICABLE KIT
HPFC upgrade w/ TSC 300/1000	
HPFC upgrade w/ TSC ready	93-1000705: STD TO HPFC FIELD INSTL KIT ALL MACHINES
HPFC upgrade w/ no TSC	
HPFC upgrade VFD coolant w/ no TSC	93-1000704: VFD TO HPFC 3' PWR CBL FIELD INSTALL KIT
HPFC upgrade VFD coolant w/ TSC 300/1000	93-1000706: VFD TO HPFC 23' PWR CBL FIELD INSTALL KIT
HPFC upgrade VFD coolant w/ TSC ready	93-1000707: VFD TO HPFC 14' PWR CBL FIELD INSTALL KIT
HPFC pumps sent out between July and December of 2020 upgrade to current production HPFC pumps.	93-3380: HPFC RETROFIT KIT Note: When this kit is being used for the upgrade, go to step 5.
If the pump on a assembly that was built from July to December of 2020 breaks the whole assembly needs to be replaced.	30-12691A: VFD TO HPFC 3' PWR FIELD INSTALL KIT

Installation

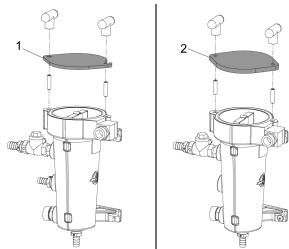
1

Push **[POWER OFF]**. Set the main circuit breaker to the OFF position.

Open the electrical cabinet door.

Lock the main circuit breaker. Use an approved lock with an approved safety tag.

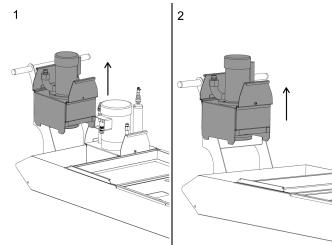
Danger: After turning off the machine, wait at least 5 minutes before working in the electrical cabinet, to allow power to dissipate. Wait for the voltage indicator LED on the vector drive to go off completely.

**2**

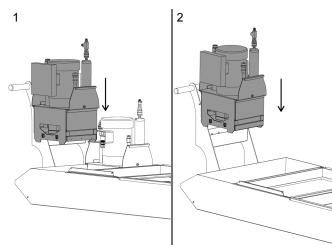
Replace the coolant filter cap [1] with the new one [2] as shown.

If the set screws do not have a hex port for an allen key, use two jam nuts (5/16"-18) and back the set screws out of the filter housing about 0.70" (17.7mm).

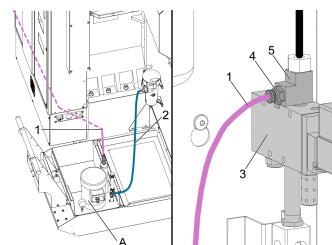
Note: You may need to apply some heat to loosen the Loctite from the set screws.

**3**

Removing the standard coolant pump. Image [1] shows the TSC option being included image [2] shows the TSC ready/no TSC configuration.

**4**

Install the High Pressure Flood Coolant (HPFC) pump. Image [1] shows the TSC option being included image [2] shows the TSC ready/no TSC configuration.

**5**

Convert standard pump to HPFC or Upgrade Existing HPFC to Current Build

Route the hoses from the HPFC pump [A] as shown.

The air hose [1] will come from the TRP solenoid in the lube panel and connect to the air cylinder.

A tee fitting [5] and 1/4 push to connect fitting [4] will need to be attached to the TRP solenoid [3]. Then connect the air hose [1] to the push to connect fitting [4].

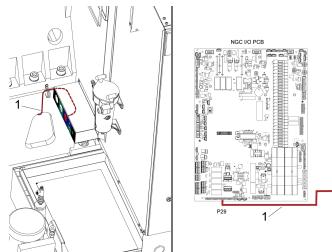
The output hose from the HPFC will go to the filter [2].

Note: Machines with TSC previously had the purple air line split between the TSC and HPFC pumps, that is no longer the case and the HPFC pump should be connected to the TRP solenoid [3] as shown in the image.

6

For machines that are not TSC ready, refer to this TSC procedure.

THROUGH SPINDLE
COOLANT - FIELD INSTALL
- NOT TSC READY - NGC



7

VFD coolant upgrade to HPFC

If you are upgrading from the VFD coolant system to HPFC remove the current cable on the coolant connection bracket and replace with the cable provided as shown [1].

Route the new cable from the bracket to I/O P29.

Note: VFD will no longer be used, a patch is required to disable the drive. Contact the Service Department for the patch.

OPTION - ACTIVATION
CODE + PATCH - NGC

8

Please refer to the link to verify and load any patches involved with the installation.

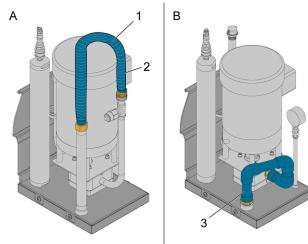
11.3 HPFC - TROUBLESHOOTING

High Pressure Flood Coolant (HPFC) - Troubleshooting Guide - NGC

⚠ Download and fillout the coolant pump Inspection Report Checklist below before replacing any parts.

COOLANT PUMP INSPECTION REPORT CHECKLIST

Introduction



The HPFC is an option that replaces the standard coolant. The HPFC can be paired with TSC and TSC ready machines, but cannot be paired with a VFD.

Within recent years, Haas Automation has made design updates to the HPFC. To identify which generation you are dealing with, look for the following key identifying features below.

1st Generation [A]:

- Coolant flows through hose [1] surrounded by a spring [2]

2nd Generation [B]:

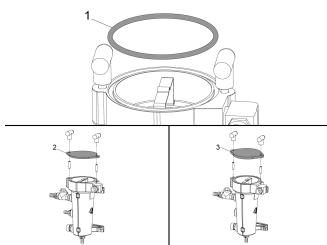
- Coolant flows through PVC pipes [3] with no spring

Symptoms Table

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
The O-ring in the filter casting is pushed out causing coolant to leak or spray out of the top cover	The filter cover was not replaced when installing/upgrading to HPFC	Replace the filter cover follow the Filter Cover Replacement section

Excessive noise from the HPFC coolant pump.	The coolant nozzles valves are closed.	Makes sure all the coolant nozzle valves are open. If not, HPFC can be noisy at normal conditions. Measure the noise with a DB meter at: the front of the machine when sliding doors open/closed and the back of the machine 3 ft away from the pump.
	Low coolant levels.	Check coolant levels and refill as necessary.
	There is an alignment problem due to the pump not properly seated.	Loosen and re-tighten the standoffs supporting the pump. Refer to the Standoff Alignment section below for more information.
	Gear pump coupler misalignment.	Order kit 93-4195 Coolant Gear Pump Coupler Conversion Kit . Follow the Pump Head Coupling - Flexible Coupling Replacement procedure. If noise persists, replace pump head.
Low coolant flow, the pump cavitates (cavitation sounds like heavy grit in the pump head, or a suction sound) or is otherwise noisy.	1st Generation Only: The pick-up hose can kink when the pump is running.	Replace the pick-up hose with the new version with a spring.
	Low coolant levels.	Check coolant levels and refill as necessary.
	Gear pump coupler misalignment.	Order kit 93-4195 Coolant Gear Pump Coupler Conversion . Follow the Pump Head Coupling - Flexible Coupling Replacement procedure. If noise persists, replace pump head.
Pressure loss is observed	The pressure relief set screw may have fallen out	Reinstall the set screw adding blue Loctite on it as well. See Pressure relief adjustment section on how to properly replace the set screw.
	2nd Generation Only: The PVC plumbing has come undone.	Reassemble plumbing. If plumbing is having issues staying intact, use PVC glue from any hardware store to keep plumbing from coming undone.
HPFC pumps from July to December of 2020 lose functionality after a software upgrade.	The HPFC pump needs to be upgraded to match the current production HPFC pumps.	Order kit 93-1000705 STD TO HPFC FIELD INSTALL KIT ALL MACHINES , follow the High Pressure Flood Coolant (HPFC) - Installation procedure.
No coolant flow or pump motor running backwards.	Incorrect power phasing - the pump motor is running backward.	Check the phasing indicators and change the incoming power cables, if necessary.
The 230V system does not turn ON and the red LED on the motor drive PCB is OFF.	The jumper on the motor drive PCB is incorrectly located or defective.	Make sure that the motor drive PCB has a jumper installed on P3 inbetween pin 1 and 2 (the bottom two pins).
	There is no 12V input power.	Make sure that the 12V input power is connected to P2 on the motor drive PCB.
Machine coolant hose leaks at the fittings or the hose pops off the fittings.	1st Generation Only: The 5/8" Hose Clamp PN: 59-1524 installed on the coolant hose is oversized and does not clamp the hose correctly.	Replace the oversized hose clamp with PN: 59-2107 HOSE CLAMP EAR 20.1 - 23.3 MM . Use a crimping tool to secure the new hose clamp.

Filter Cover Replacement



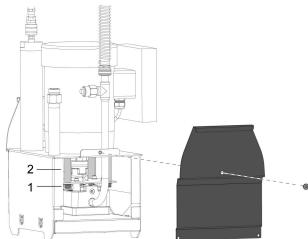
If the O-ring [1] was pushed out of position replace the original filter cover [2] with the new thick filter cover [3]. IF the O-ring is damaged replace the O-ring.

Replace the coolant filter cap [1] with the new one [2] as shown.

If the set screws do not have a hex port for an allen key, use two jam nuts (5/16"-18) and back the set screws out of the filter housing about 0.70" (17.7mm).

 **Note:** You may need to apply some heat to loosen the Loctite from the set screws.

Standoff Alignment



Remove the side panel covering the pump in order to access the standoffs.

Loosen the (x4) standoff bolts.

Re-tighten the (x4) standoff bolts.

Run the pump while listening for excessive noise.

Pressure Relief Adjustment



Only applicable for 1st Generation:

1. If your flow appears low, tighten set screw 1/8 of a turn at a time until you've reached a desired flow at the spindle coolant manifold.

 **NOTE:** Only adjust the set screw **1/8 of a turn** at a time. If it is fastened all the way, the flow could be so strong that it could blow a hose off the machine or the lid off the filter.



2. With the pump running, close the valve on the hose assembly and observe the pressure on the valve

3. Remove the pump from the tank. Adjust the set screw to adjust the pressure, the pressure range is from 170-210 PSI. If the set screw gets adjusted, check the blocked pressure at the pump outlet and make sure it doesn't exceed 200 psi.

 **NOTE:** Tightening the screw will increase pressure, loosening will decrease pressure.

 **IMPORTANT:** Make sure to add blue Loctite to the set screw

Incorrect Input Power-Phasing



The power supply PCB has a phase detect with neon indicators on the top center portion of the board. Make sure that the electrical power is phased correctly:

- **Green Light:** The incoming power is phased correctly.
- **Orange Light:** The incoming power is incorrectly phased.
- **Both Lights:** A phase is missing (there is a loose cable in the system).



If the electrical power is phased incorrectly:

Set the main circuit breaker on the machine to the OFF position.

Lock the main circuit breaker. Use an approved lock with an approved safety tag.

Swap the #74 and #75 incoming power cables at the main transformer.

Kinked Pick-up hose

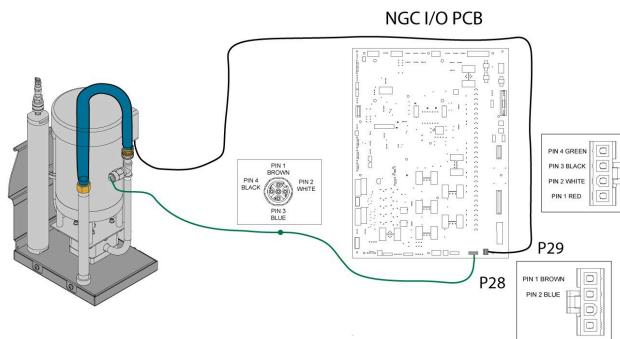


Only applicable for 1st Generation:

The pick-up hose can kink when the pump is running. Replace the pick-up hose with the new version with a spring.

Electrical Schematic

1st Generation



2nd Generation

