3 - Standard Flood Coolant

Chip Removal and Coolant - Service Manual

3.1 COOLANT - OVERVIEW

Improper Coolants

Coolant is an important part of many machining operations. When it is correctly used and maintained, coolant can improve part finish, lengthen tool life, and protect machine components from rust and other damage. Improper coolants, however, can cause significant damage to your machine.

Such damage can void your warranty, but it can also introduce hazardous conditions to your shop. For example, coolant leaks through damaged seals could create a slipping hazard.

Improper coolant use includes, but is not limited to, these points:

- Do not use plain water. This causes machine components to rust.
- Do not use flammable coolants.
- Do not use straight or “neat” mineral-oil products. These products cause damage to rubber seals and tubing throughout the machine. If you use a minimum-quantity lubrication system for near-dry machining, use only the recommended oils.

Machine coolant must be water-soluble, synthetic oil-based or synthetic-based coolant or lubricant.

NOTE: Be sure to maintain your coolant mixture to keep the coolant concentrate at acceptable levels. Improperly maintained coolant mixtures can allow machine components to rust. Rust damage is not covered by your warranty.
Ask your HFO or your coolant dealer if you have questions about the specific coolant that you plan to use.

Coolant - Overview

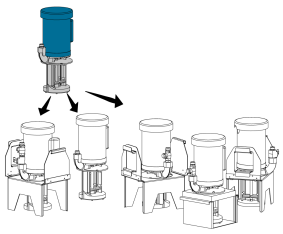
3.2 COOLANT PUMP - REPLACEMENT

Standard Coolant - Pump - 3/4 HP - Replacement

AD0217

Applies to machines built from: April, 1998

Introduction



The 3/4 hp Single-Phase Universal Replacement Pump:

- You can adapt this universal replacement pump to fit all machines that use a 3/4 hp single-phase pump.
- The replacement pump fits and will operate the same as the old pump, although it may look different from the old pump.
- Sheetmetal from your old pump will bolt onto the new unit.
- If the power cable on the new pump is different from the old pump, move the cable from the old pump to the new pump.

Inspect the impeller before replacing entire pump assembly. Replacing a damaged impeller can correct noise and output issues. Refer to STANDARD (FLOOD) COOLANT - SYSTEM - TROUBLESHOOTING GUIDE for impeller replacement instructions.

Machine Compatibility

You can install the 3/4 hp, single-phase Universal Replacement Pump on any machine that currently has a 3/4 hp, single-phase coolant pump.

Document Applies to these Parts

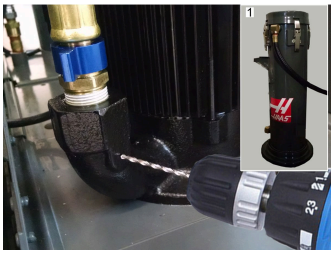
[A] 30-11848A QTY: 1 CLNT PUMP/MOTOR ASSEMBLY 3/4HP 1PH

[B] 26-7650A QTY: 1 PUMP IMPELLER

Tools Required

- Wire Cutters
- Crescent Wrench
- Phillips Screwdriver
- 3/16" Allen Wrench
- Drill Bit - "Q" (0.322")
- 1/8" NPT Tap and Handle
- Drill
- Thread Sealing Tape

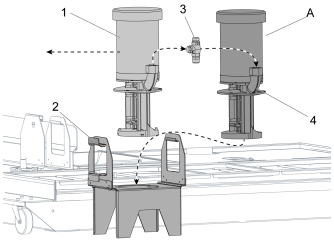
Replacement



1

If a standard auxiliary coolant filter (AF-STD) system [1] is not connected to the old pump, do Step 2.

If a standard auxiliary coolant filter (AF-STD) system [1] is connected to your old pump, drill and tap a 1/8" NPT hole at the location on the pump shown.



2

Disconnect and remove the old pump [1] from the coolant tank.

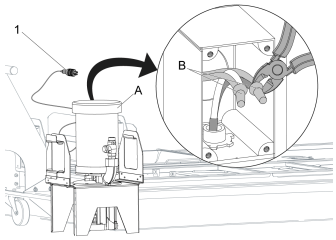
Remove the hose fittings [3] from the old pump. Note their orientation and order.

Remove the old pump from the stand [2], if applicable.

Install the PUMP/MOTOR [A] into the old stand, if applicable. Use the old hardware.

Apply sealant to the threads of the old fittings [3]. Install the fittings [3] on the PUMP/MOTOR [A] in the correct location [4].

Connect the AF-STD fittings to the new pump, if applicable.



3

Do this step if you must replace the PUMP/MOTOR [A] and the plug on new cable [1] is not compatible with the machine:

Note the wiring before removing the cable. Remove the cable [1] from the old pump motor. Remove the cover and cable from the new PUMP/MOTOR [A]. Install the cable [1] from the old motor to the new PUMP/MOTOR [A].

Correctly connect the old cable to the new PUMP/MOTOR [A]. Use the (2) CRIMP WIRE NUTS [B]. Use wire strippers and crimp pliers to correctly connect the cable.

Install the new pump assembly into the coolant tank. Connect the supply hoses and power connector.

If you have an AF-STD system, install the 1/4" hose and the 1/8" to 1/4" fitting from the AF-STD kit into the hole you drilled in STEP 1.

Push COOLANT. Make sure the coolant system operates correctly. Examine all connections for leaks.

3.3 COOLANT PUMP IMPELLER - REPLACEMENT

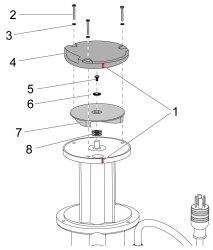
Standard Coolant - A-Ryung Coolant Pump - Impeller - Replacement

AD0349

Introduction

This procedure tells you how to install and shim a replacement impeller on an A-Ryung coolant pump.

Replacement



1

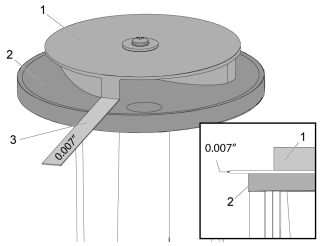
Put a mark [1] on the pump cover and the body so that you can install the cover in the correct orientation.

Remove these components:

- The (3) screws [2] and the (3) lock washers [3] for the pump cover.
- The impeller cover [4]
- The Philip Head Screw (PHS) [5] and hard washer [6]

  Note: Turn the PHS [5] clockwise to loosen it. Discard the star washer if present where the hard washer [6] should be.

- The impeller [7]
- The shims from the impeller shaft [8]



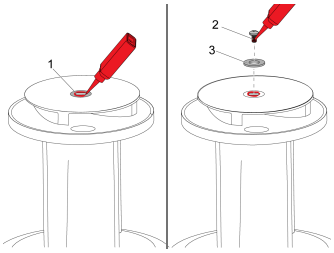
2

Install the same number of shims that you removed onto the impeller shaft.

Install the impeller, the flat washer and the impeller screw.

Note: Turn the impeller screw counterclockwise to tighten it.

Adjust the number of shims on the impeller shaft until the gap between the impeller [1] and the pump base [2] is 0.007" [3].



3

Remove the impeller screw and flat washer.

Put red thread locking compound around the edge of the impeller shaft. [1]

Slide the impeller up and down on the shaft. Make sure that the locking compound is spread evenly on the shaft and the inside of the bore of the impeller.

Put red thread locking compound on the impeller screw [2].

Install the screw [2] and the flat washer [3].

Note: Turn the impeller screw counterclockwise to tighten it.

Align the marks on the cover and the pump body.

Install the impeller cover with the (3) screws and (3) lock washers.

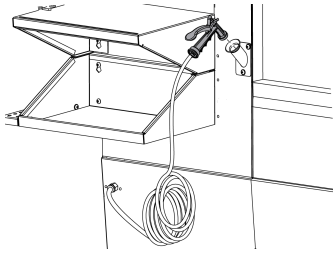
3.4 WASHDOWN HOSE - INSTALLATION

Washdown Hose - Installation - VMC

AD0104

Applies to machines built from: November, 2013

Introduction



This procedure tells you how to install a washdown hose. The kit for the washdown hose is in the tote kit.

Mills larger than the VF-5 have a second washdown hose. To install a second washdown hose use this procedure: SUPPLEMENTAL WASHDOWN HOSE

These instructions apply to these machines:

- VM-1/2 - Made after 11/13/2013
- VF-1/2 - Made after 11/13/2013
- VF-3/4/5 - Made after 02/20/2014
- VF-6/7/8/9/10/11/12 - Made after 06/09/2014
- DT-1 - Made after 06/09/2014
- DM-1 - Made after 01/01/2015
- MM/SMM - Made after 07/01/2015

Parts Required

58-1650A

QTY: 1

HOSE 3/8 ID 3/4 GHM 3/4 GHF 13.5FT

59-6310A

QTY: 1

WASHGUN, WASHDOWN GILMOUR 573

30-11613

QTY: 1

WASHGUN, HOLSTER AND GASK

40-1981

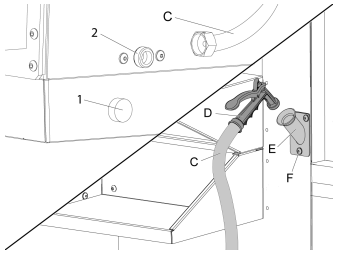
QTY: 3

FBHCS 1/4-20 X 1/2 LOCTITE

Tools Required

Crescent Wrench 5/32" Allen Wrench

Installation



1

Apply thread sealant to all threaded surfaces of the coolant fittings.

Find the cap [1] at the bottom left on the enclosure. Remove the cap [1] from the MALE ENCLOSURE FITTING [2].

Note: Coolant can come out when you remove the cap.

Attach the WASH GUN HOLSTER and GASKET [E] to the enclosure face. Use the screws [F].

NOTE: For proper operation, make sure the wash gun gasket is properly seated. It needs to be flush at the bottom of the wash gun housing.

Attach the HOSE ASSEMBLY [C] to the MALE ENCLOSURE FITTING [2]. Attach the HOSE ASSEMBLY [C] to the WASH GUN [D].

Put the HOSE ASSEMBLY [C] in the WASH GUN HOLSTER [E].

3.5 COOLANT - MAINTENANCE

Standard Coolant – Maintaining Your Coolant Mixture

Machine Tool Coolant Series

We made these videos to address the most common questions and problems customers have about coolant maintenance. The videos are based on decades of day-to-day experience in our own factory machine shop, in our service department, and at our Haas Factory Outlets around the world.

Each video covers a complete topic, so you can watch them in any order, all together, or individually. If you are new to mixing and maintaining coolant, we recommend that you start with “Tools of Coolant”. This video gives you a complete overview of the tools you will need to make your coolant maintenance easier.

Note: Be sure to maintain your coolant mixture to keep the coolant concentrate at acceptable levels. Improperly maintained coolant mixtures can allow machine components to rust. Rust damage is not covered by your warranty. Always wear proper eye protection when maintaining coolant systems. Clean any spilled coolant from the floor.

MACHINE TOOL COOLANT - COOLANT SIMPLIFIED

MACHINE TOOL COOLANT - TOOLS OF COOLANT

MACHINE TOOL COOLANT - MAKING A NEW BATCH

MACHINE TOOL COOLANT - TOP UP HIGH CONCENTRATION

MACHINE TOOL COOLANT - TOP UP LOW CONCENTRATION

MACHINE TOOL COOLANT - CLEANING YOUR TANK

Looking for the maintenance log?

COOLANT MAINTENANCE LOG

3.6 STANDARD COOLANT - TROUBLESHOOTING

Standard Coolant - Troubleshooting Guide - NGC

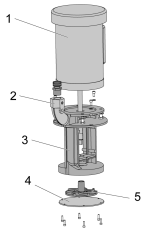
Download and fillout the coolant pump Inspection Report Checklist below before replacing any parts.

COOLANT PUMP INSPECTION REPORT CHECKLIST

Introduction

The following service video shows how to troubleshoot a standard flood coolant pump

NOTE: This video is for reference only and does not replace the written procedure.

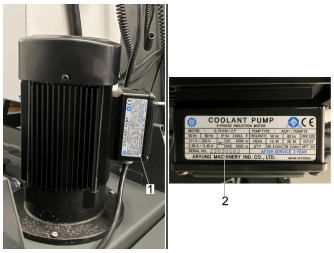


This troubleshooting guide applies to both 1-Phase and 3-Phase pumps.

In this image, the following components are shown.

1. Coolant Pump Motor
2. Coolant Outlet
3. Pump Body
4. Impeller Cap
5. Impeller

NOTE: For troubleshooting information on the coolant float sensor, refer to the COOLANT LEVEL FLOAT SENSOR - TROUBLESHOOTING GUIDE for more information.



ID0013 Coolant Pump Inspection Report Checklist requires the pump's serial number to be completed.

The serial number can be found on the side of the pump [1] in the box labeled serial number [2]

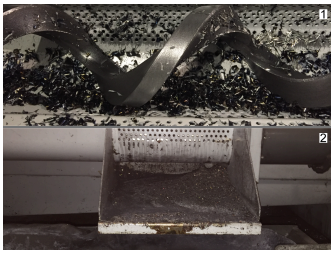
Symptom Table

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Machine with Variable Frequency Drive - The coolant takes too long to flow out the nozzles or Pcool.	The variable frequency drive has an incorrect acceleration parameter value.	Refer to the Coolant VFD - Troubleshooting Guide.
Noisy pump or cavitation	Poor Coolant flow through enclosure	Remove chip buildup.
	Low Coolant Level	Fill coolant tank.
	Impeller contamination, or impeller damage	Inspect impeller for damage or debris. Clean impeller or order kit **93-2609** to replace impeller. Follow Impeller Replacement Procedure to replace.
	Motor bearing failure.	Rotate the shaft by hand

Low coolant flow.	Poor Coolant flow through enclosure	Remove chip buildup.
	Low coolant level in coolant tank	Fill coolant tank.
	Impeller contamination, or impeller damage	Refer to the **Coolant Pump Impeller Damage/Contamination** section below to check the impeller in the pump.
	Filter or pump intake blockage.	Clean filter, check pump intake for blockage.
	Pump intake or coolant output hose blockage	Remove coolant check-valve and coolant output hose blockage.
	Coolant nozzle blockage	Remove blockage from coolant nozzles
The coolant pump is not building pressure.	The motor shaft may be slipping due to the coupling not being fastened all the way.	Thoroughly inspect the pump assembly and verify the motor shaft coupling is fastened down all the way.
No coolant flow and coolant circuit breaker did not trip.	**Setting 32** COOLANT OVERRIDE is set to IGNORE.	Set **Setting 32** COOLANT OVERRIDE to NORMAL.
	Coolant pump motor does not receive voltage.	See the No Voltage at the Pump Motor section below.
	Incorrect power phasing - pump motor is running backward.	Correct phasing
	Impeller contamination or damage	Refer to the **Coolant Pump Impeller Damage/Contamination** section below to check the impeller in the pump.
No coolant flow and the coolant circuit breaker tripped.	Coolant pump motor short to ground.	Measure coolant pump motor resistance to ground.
(Single-phase machines only), **Alarm 552 TRIPPED CIRCUIT BREAKER** occurs when the coolant pump gets commanded to turn on. **Note:** The circuit breaker did not tripped.	The 240 VAC input cable connected to the PSUP at P11 is not correct.	Verify the cable pinout for the cable that connects from the main circuit breaker to the PSUP at P11. Refer to Incorrectly pinned power cable (Single-Phase) section.
Alarm 552 TRIPPED CIRCUIT BREAKER	Refer to: Next Generation Control - Power Distribution PCB and PFDM - Troubleshooting Guide.	
Coolant leaking from machine enclosure onto floor.	**This applies to ST-20 reboot enclosures only.** The grommet that seals the Sub-Spindle Hydraulic Union drain line fails to seal due to the hose pulling on the grommet.	Install the ST-20 Sub-Spindle Hose Routing Retrofit Kit Part Number: 93-3127. This reroutes the drain hose and clamps the hose limiting the movement and ability to pull on the grommet. Follow the Installation Guide to retrofit your machine.
Alarm 9823 Coolant VFD Fault **Alarm 9824** Shower Coolant VFD Fault	There is a problem with the Coolant / Shower VFD.	Refer to the Coolant VFD - Troubleshooting Guide.

Coolant pump with an Aux filter is splashing on the floor when pump is commanded off	When pump is commanded to stop coolant left over in the line returns through the pump and splashes into the tank.	Install a check valve on the output side of the aux filter to stop the coolant from returning and splashing. Please refer to **Aux Filter Check Valve** section for installation. Please contact Haas Service if a check valve is installed to the output of the aux filter.
Motor hums when commanded to turn on Turns slowly, drawing higher than normal current and eventually trips the breaker Turns backwards	**Note:** For pumps dated DEC-2019 to FEB-2020 Coolant pump start capacitor failed.	Order the service kit, **93-3364**, and replace the failed capacitor. Refer to the Coolant Pump - Start Capacitor - Replacement procedure.
Alarm 9823 COOLANT VFD FAULT **Alarm 552** TRIPPED CIRCUIT BREAKER **and** The CB3 on the PSUP PCB has tripped on machines without a VFD.	The flood coolant pump has seized up.	Refer to the **Coolant Pump Impeller Damage/Contamination** section below to check the impeller in the pump.
The 5/8" coolant hose leaks at the fittings or the hose pops off the fittings.	The 5/8" Hose Clamp**[1]** 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.

Poor coolant flow through enclosure



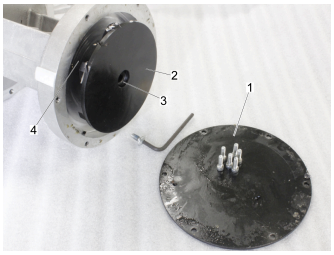
Remove all chips from the the auger trough [1], and the coolant return drain [2].

Remove chips from the coolant tank. Excessive chips in the coolant tank reduce the amount of coolant the tank can store. Watch the video MACHINE TOOL COOLANT - CLEANING YOUR TANK - VIDEO.

Fill the coolant tank. Watch the video STANDARD COOLANT – SIMPLIFIED - FILLING YOUR TANK ... AND MORE.

Make sure the coolant level sensor operates correctly.

Coolant Pump Impeller Damage/Contamination



Remove the impeller cap [1] from the bottom of the pump. Remove the screw that connects the impeller [2] to the shaft. Steel impellers have left-hand threads [3].

Carefully remove and clean the impeller [2]. Check for wear, damage, or cracking of the impeller [2].

If the impeller is damaged or cracked, order a replacement impeller, service part **93-2609**. Follow IMPELLER REPLACEMENT PROCEDURE to replace.

Rotate the coolant pump shaft by hand. If the shaft does not turn freely, the motor bearings are damaged.

Install the impeller [2]. Rotate the coolant pump shaft by hand, and make sure the impeller does not rub on the pump body [4]. If the impeller rubs against the pump body, install shims between the impeller [2] and the coolant pump shaft. Install the impeller cap [1]. If the impeller [2] rubs against the impeller cap [1], remove one shim at a time until it does not rub.

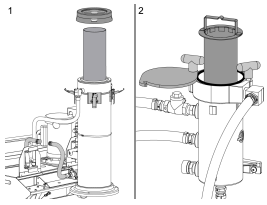
There are several filters that keep chips out of the coolant pump. Refer to Section 3 for filter maintenance information.

Aux Filter Check Valve Install

Place the check valve [1] on the outlet side of the auxiliary filter as shown.

NOTE: Please contact Haas Service if this is done.

Filter or pump blockage



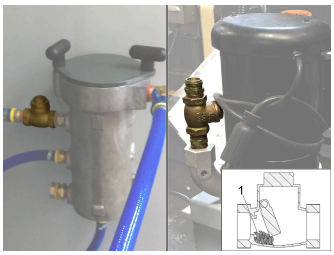
Clean or replace the filter element. Check the area around the coolant pump intake for chips.

1. Auxiliary Filter - The bag filters in Auxiliary Filter tanks need to be cleaned or replaced. The Auxiliary Filter is an option. Your machine might not have this option.
2. Standard Filter - Standard Filters need to be cleaned.

Disconnect both ends of the coolant hoses. Remove any kinks. In the opposite direction of the coolant flow, blow air through the hoses to remove any chips. If you find chips in the hoses, check the coolant nozzles and washdown hoses for chip buildup. Connect the coolant hoses.

Remove chips from the basket filter in the coolant tank. For maintenance instructions, refer to the COOLANT TANK - MAINTENANCE procedure.

Check valve blockage (Coolant filter and Haas Chip Seperator)



Remove the coolant check-valve. Check it for blockage [1]. Make sure the trap door opens and closes freely. If the trap door does not close, coolant flows back into the tank. This delays the flow of coolant by a few seconds.

Disconnect both ends of the coolant hoses. Remove any kinks. In the opposite direction of the coolant flow, blow air through the hoses to remove any chips. If you find chips in the hoses, check the coolant nozzles and washdown hoses for chip buildup. Connect the coolant hoses.

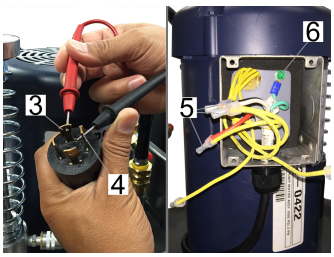
Coolant nozzle blockage

Remove and clean the coolant nozzles.

Cycle the pump power to flush the coolant lines.

Make sure the coolant tank is free of chips and contamination.

Defective pump



1. Disconnect the pump cable from the machine.
2. With a ohm-meter measure each leg tab to the ground tab.
   Note: The ground tab has a bent. The example shown is a 3-phase pump with 4 tabs (L1, L2, L3 + Ground), single phase pumps have 3 tabs (L1, L2 + Ground).
   - If all the legs test open (O.L) to the ground tab then the pump and cable do not have a short circuit, see the next section.
   - If the motor cable leads [3] indicate a short, remove the motor cable cover and disconnect the cable from the motor.
3. Measure the motor cable leads [5] to ground [6] terminal screw or chassis. If any lead tests short, the pump is at fault. If none of the leads [5] test short, the cable is at fault.
4. If all the leads test OK, check the coolant pump for binding that could cause an over amperage condition.

No voltage at pump motor

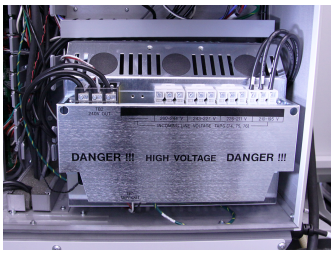
1. First inspect the pump motor for a short circuit see section **Defective Pump**.
2. Make sure the coolant pump cable is connected to the machine.
   Important: Do not disconnect the coolant pump from the machine, doing this test without a load will give you false readings.
3. Remove the pump motor cover and locate the white, black, red wires for 3-phase motor or white and black for a single-phase.
4. Verify that coolant circuit breaker is set to on and **setting 32** COOLANT OVERRIDE is set to NORMAL.
5. Press the **[COOLANT]** button to turn on the coolant pump.
6. Measure the voltage at the motor from lead to lead [1]. The reading must be 240 VAC. The motor shown is a 3-phase motor.
   - If you read 240 VAC, the coolant pump motor is damaged.
   - If you do not read 240 VAC, check at the I/O PCB coolant output. If there is still no voltage check the

240 VAC source from the PSUP PCB to I/O PCB.

Incorrect 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 to the OFF position.

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

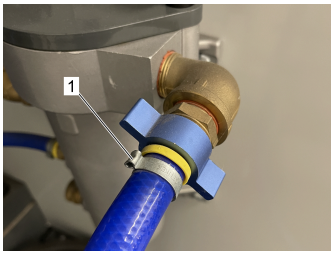
Swap the #74 and #75 incoming power cables at the main transformer.

Incorrectly pinned power cable (Single-Phase)

Correct the pinnout on cable P/N 33-0197C, PSUP P11 (NGC).

The cable should match the drawing shown.

Coolant Hose Clamp Failure



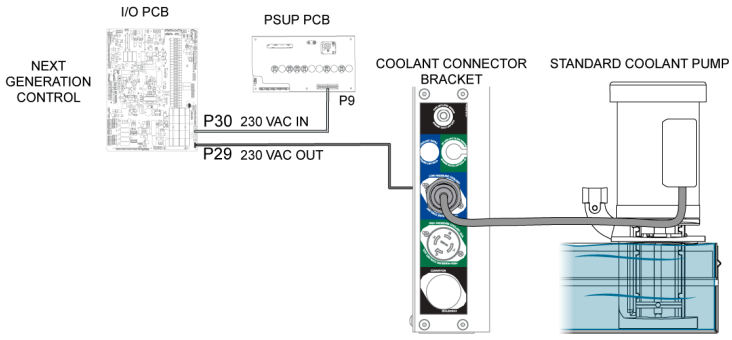
Problem: The 5/8" coolant hose leaks at the fittings or the hose pops off the fittings.

Cause: The 5/8" Hose Clamp**[1]** PN: **59-1524** installed on the coolant hose is oversized and does not clamp the hose correctly.

Solution: 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.

Electrical Diagrams

Use this electrical diagram for coolant pumps that are being driven by the I/O PCB.



3.7 COOLANT VFD - TROUBLESHOOTING

Coolant VFD - Troubleshooting Guide - NGC

Variable Frequency Drive (VFD) - Coolant Pumps

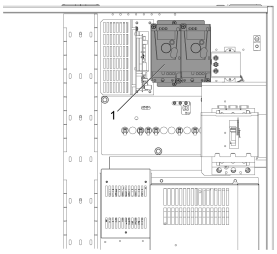
UMC's built after Nov 2019 and EC-1600's built after Jan 2020 now have a variable frequency drive (VFD) [1] units. These VFD units are located on the control cabinet above the PSUP PCB, these units will drive the coolant pump and the shower coolant pump (if equipped).

A VFD is a Variable Frequency Drive. VFD's run motors, and change their output frequency based on a command. This changes the speed of the motor. When used with coolant pump motors, coolant flow and pressure can be controlled, and not depend on the local line frequency of 50 or 60Hz. Some machines have up to two coolant pumps: standard and shower coolant; each is controlled by a separate VFD.

More troubleshooting information can be found on the manufacturer's user manual.

SCHNEIDER ALTIVAR 12
USER MANUAL

DELTA ME300 SERIES
USER MANUAL



This feature allows you to select the desired pressure of the coolant pump.

An optional P-Code can now be specified along with an M08. This P-Code can be used to specify the desired pressure level of the coolant pump:

P0 = Low Pressure
P1 = Normal Pressure
P2 = High Pressure

Note: If no P-Code is specified, or the specified P-Code is out of range, then normal pressure will be used.

Note: Specifying a P2 (High Pressure), the coolant pump will operate at louder sound level, this is normal.

The following parameters enable the VFD drive:

NOTE: These parameters are set at the factory and listed here for reference only.

- 2232 Coolant VDF Type
- 2233 Shower Coolant VFD Type

When set to 0 = no VFD and 1= VFD.

Symptom Table

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Machine with SCHENEIDER Variable Frequency Drive - The coolant takes too long to flow out the nozzles or Pcool.	The variable frequency drive has an incorrect acceleration parameter value.	Make sure the acceleration parameter on the variable frequency drive (VFD) is set to 0.3 seconds. Refer to the VFD Acceleration Parameter Verification section below.
Alarm 9823 Coolant VFD Fault **Alarm 9824** Shower Coolant VFD Fault	The coolant or shower pump is not plugged in.	Make sure the coolant or shower pump is connected to the coolant port. Check that the coolant cables are connected.
	The variable frequency drive reported a fault.	Open the control cabinet and see what fault was generated by the VFD. Refer to the VFD Manual, see **Variable Frequency Drive (VFD)** section below.
	The communication between the VFD unit and the control are not correct.	See **Variable Frequency Drive (VFD)** section below.
	The VFD overloaded while running at the highest pressure setting P2	See **Variable Frequency Drive (VFD)** section below for VFD overload troubleshooting process. Contact Haas Service to notify them of this issue.
	Motor overload **"OFL"** alarm on the VFD while using the washdown nozzle	Check the coolant tank level and to make sure the pump is not cavitating and verify the coolant tank is free of chips.

The Coolant VFD is commanded to turn on (M08 PX) and the VFD shows "READY" and pump does not turn on or takes several minutes to turn on.	The coolant VFD enable signal is not being read.	Determine if the drive has the Coolant VFD - Retrofit Kit Installed. Refer to the Coolant VFD - Retrofit Kit - AD0602 procedure.

VFD I/O Signals

The commands in a program cause an enable and speed command signal from the IOPCB to the VFD. Power for the VFD is supplied directly from the Main Transformer.

Use the below table to make sure the CNC control is sending and receiving the correct signals from the Coolant VFD unit.

Note: The value on the readout can be +/- 3Hz.

COMMAND	INPUT / OUTPUT	DIAGNOSTICS BITS	VOLTAGES AT VFD (SCHNEIDER)	VOLTAGES AT VFD (DELTA)	VFD DISPLAY
M08 P0	INPUT 112	VFD_COOLANT_FAULT = 0	RIA / COM ≈ 0VDC	RA / COM ≈ 0 VDC	49.9 Hz
	OUTPUT 170	VFD_COOLANT_BIT_1 = 1	AI1 / COM ≈ 6.24 VDC	AVI / COM ≈ 6.25 VDC	
	OUTPUT 171	VFD_COOLANT_BIT_2 = 0			
	OUTPUT 172	VFD_COOLANT_ENABLE = 1	LI1 / COM ≈ 0.3 VDC	MI1 / COM ≈ 0.95 VDC	
M08 P1	INPUT 112	VFD_COOLANT_FAULT = 0	RIA / COM ≈ 0 VDC	RA / COM ≈ 0 VDC	59.9 Hz
	OUTPUT 170	VFD_COOLANT_BIT_1 = 0	AI1 / COM ≈ 7.5 VDC	AVI / COM ≈ 7.5 VDC	
	OUTPUT 171	VFD_COOLANT_BIT_2 = 1			
	OUTPUT 172	VFD_COOLANT_ENABLE = 1	LI1 / COM ≈ 0.3 VDC	MI1 / COM ≈ 0.95 VDC	
M08 P2	INPUT 112	VFD_COOLANT_FAULT = 0	RIA / COM ≈ 0VDC	RA / COM ≈ 0 VDC	78.8 Hz
	OUTPUT 170	VFD_COOLANT_BIT_1 = 1	AI1 / COM ≈ 9.9 VDC	AVI / COM ≈ 9.9 VDC	
	OUTPUT 171	VFD_COOLANT_BIT_2 = 1			
	OUTPUT 172	VFD_COOLANT_ENABLE = 1	LI1 / COM ≈ 0.3 VDC	MI1 / COM ≈ 0.95 VDC	

ALARM	INPUT/OUTPUT	DIAGNOSTIC BITS	VOLTAGES AT VFD (SCHNEIDER)	VOLTAGES AT VFD (DELTA)
9823 COOLANT VFD FAULT	INPUT 112	VFD_COOLANT_FAULT = 1	RIA / COM ≈ 12 VDC	RA / COM ≈ 12VDC
	OUTPUT 170	VFD_COOLANT_BIT_1 = 0	AI1 / COM ≈ 0.0 VDC	AVI / COM ≈ 0.16 VDC
	OUTPUT 171	VFD_COOLANT_BIT_2 = 0		
	OUTPUT 172	VFD_COOLANT_ENABLE = 0	LI1 / COM ≈ 12 VDC	MI1 / COM ≈ 12 VDC

VFD Acceleration Parameter Verification

The following procedure will show you how to make sure the acceleration

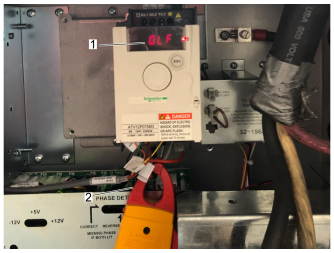
parameter on the Schneider ATV12 VFD is set correctly.

With the machine power on.

WARNING: Becareful not to touch the incoming High Voltage Power wires. If you don't feel comfortable with this procedure please contact your Haas Factory Outlet.

1. Press the dial button one time
2. Rotate the dial until you find **CONF** displayed on the screen.
3. Press the dial button one time.
4. Rotate the dial until you find **ACC** displayed on the screen.
5. Press the dial button one time.
6. Rotate the dial until the screen reads **0.3**
7. Press the dial button one time.
8. Press the **ESC** button until the screen reads **RDY**

VFD overload troubleshooting



1

The VFD will need to be tested at each of the pressure settings at each of the pressure settings make sure they are withing the range of the following.

NOTE: The frequency can be seen where the overload alarm is shown [1]. Use a clamp meter [2] to record the current at the different settings.

~50 Hz at P0, test current at this setting and record

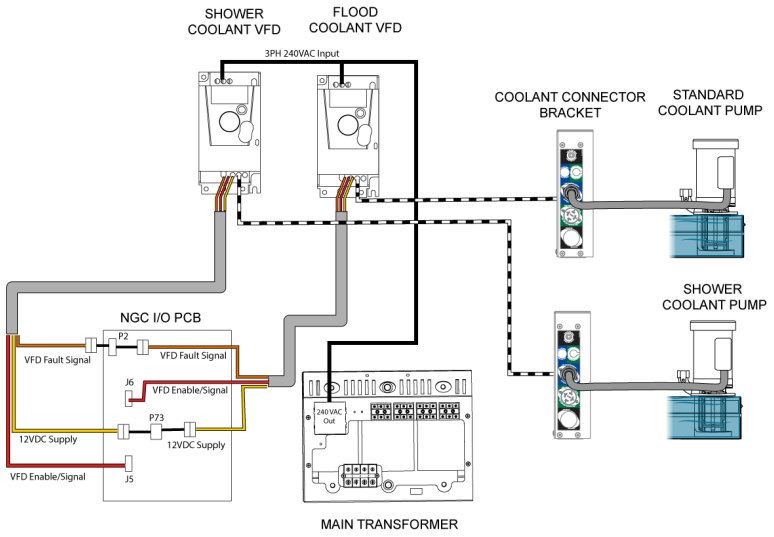
~60 Hz at P1, test current at this setting and record

~80 Hz at P2, test current at this setting and record.

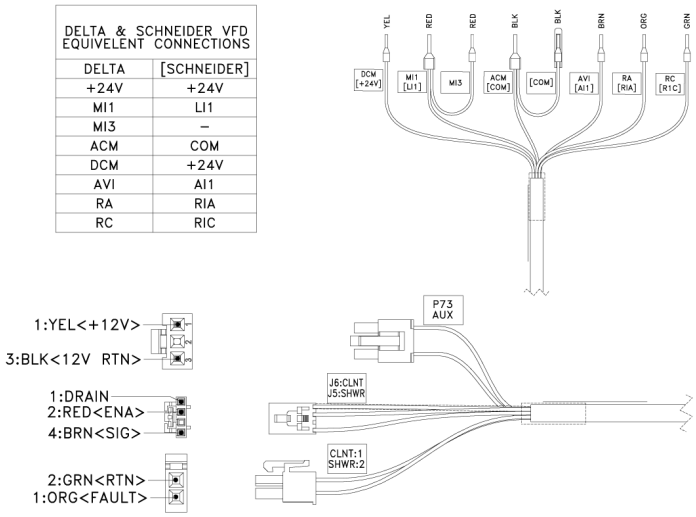
NOTE: Frequency should be within +/- 3Hz. If you are having overload issues contact Haas service.

Electrical Diagrams

Use this electrical diagram for coolant pumps that are being driven by the Variable Frequency Drive With Cable 33-9934B.

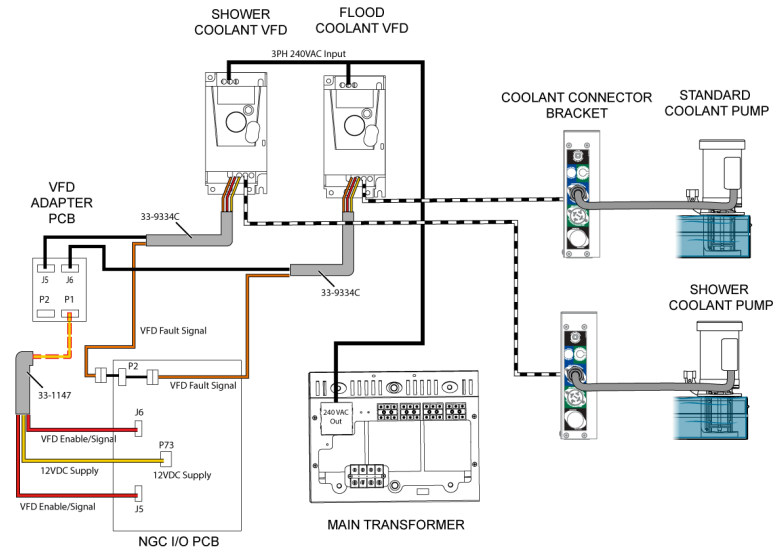


33-9334B VFD Detail Cable Diagram



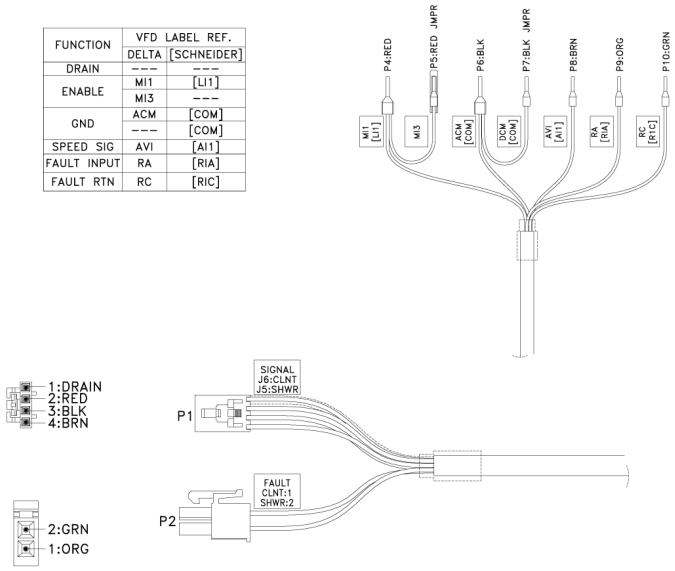
DELTA & SCHNEIDER VFD EQUIVELENT CONNECTIONS	
DELTA	[SCHNEIDER]
+24V	+24V
MI1	LI1
MI3	–
ACM	COM
DCM	+24V
AVI	AI1
RA	RIA
RC	RIC

Use this electrical diagram for coolant pumps that are being driven by the Variable Frequency Drive With Cable 33-9334C.



33-9334C VFD Detail Cable Diagram

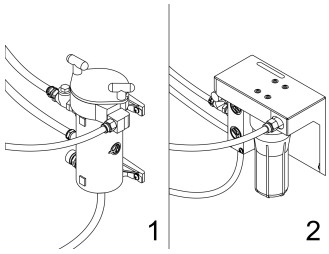
FUNCTION	VFD LABEL REF.	
	DELTA	[SCHNEIDER]
DRAIN	---	---
ENABLE	MI1	[LI1]
	MI3	---
GND	ACM	[COM]
	---	[COM]
SPEED SIG	AVI	[AI1]
FAULT INPUT	RA	[RIA]
FAULT RTN	RC	[RIC]



Standard Coolant - Filter - Cast-Aluminum - Upgrade

AD0246

Introduction



Machines built after December 2015 have the cast coolant-filter [1]. This procedure tells you how to replace the standard coolant-filter [2] with the cast coolant-filter [1]. The standard coolant-filter [2] has a plastic reservoir.

Note: The cast coolant-filter [1] replaces all standard coolant-filters [2].

Note: The coolant filter has been replaced with the chip seperator. For more information regarding the chip seperator click HERE.

Machine Compatibility

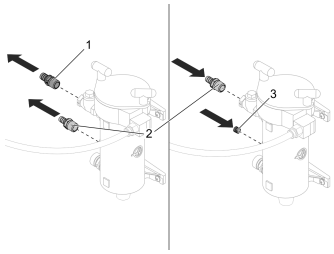
The cast coolant-filter is compatible with VMCs and HMCs.

Document Applies to these Parts

93-2356 QTY: 1

FILTER, STANDARD COOLANT HEAD/BOWL REPLACEMENT KIT

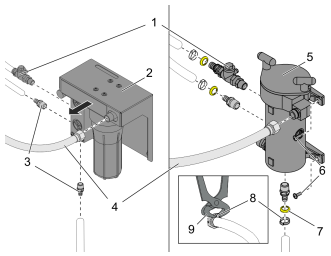
Standard Coolant Filter Assembly - Replacement



1

For DM, DT, EC-1600, MM, SMM, and TM machines: Use the (2) crescent wrenches and remove the 1/2" fitting [2]. Use the allen wrench to install the plug [3].

For DM, DT, MM, SMM, and TM machines: Use the (2) crescent wrenches to remove the 5/8" fitting [1]



and install the 1/2" fitting [2].

For all machines, go to step 2.

2

Remove all coolant hoses. Use the (2) crescent wrenches to remove all fittings [3] and the valve assembly [1]. Keep all the fittings. Remove and discard the standard coolant-filter [2].

Attach the cast coolant-filter [5]. Use the Phillips screwdriver and install the (2) screws [6]. Install all coolant fittings [3] and the valve assembly [1].

Connect the hose [4].

When you install the (3) remaining hoses, do these steps for each hose:

- Install the hose cap [7].
- Install the hose clamp [8].
- Use the crimp pliers [9] to crimp the hose clamp [8].

If the machine has 3/4" coolant hoses, use the 1/2"-to-3/4" inch adapter in the kit.