HENNIG

USER MANUAL

ULTRAFLOW HIGH-PRESSURE COOLANT SYSTEMS



ULTRAFLOW HIGH-PRESSURE COOLANT SYSTEM

The Hennig UltraFlow High-Pressure Coolant System is the ultimate high pressure coolant pump for more demanding applications. The system features multiple options for the pump configuration and has dual 5-micron filtration (10-micron optional) which allows the user to change one bag while the system is still in operation. Utilizing our Adaptive Pressure Control, the coolant flow is dynamically adjusted to output the desired pressure, which can be set from the UltraFlow HMI or from the CNC's optional m-codes.

Your Hennig system undergoes 100% end-of-line test and inspection to verify proper function, prior to packing and shipment.

For questions regarding your system, or assistance in new applications, contact a customer service representative: 815.636.9900 or info@hennig-inc.com.

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SYSTEM OVERVIEW

Unit Specifications				
		8x1	8x2	16x1
Voltage		230 VAC		
Full Load Amperage*		20	40	40
Max Flow		8 GPM	16 GPM	16 GPM
Max Pressure		1,000 PSI (69 bar)		
Filter		Dual 5 micron (10 micron optional)		
Inlet		Mounted suction hose w/ foot valve		
Outlet	Type	3/8 NPT	3/8 NPT	1/2 NPT
	Quantity	1	2	2
Dimensions (L x W x H)	inch (mm)	38 x 26 x 54 (965.2 x 660.4 x 1371.6)		
Weight (lbs)		750	850	935

**8x2, 16x1 systems typically require a 50A drop (if machine has enough overhead a drop is not required).*
**8x1 systems can be wired to pull power from the machine tool if 25A is available. If powered separately from the machine, a 25A drop is required.*

Features

- Up to 1,000 psi (69 bar)
- Up to 16 GPM (60.6 l/min)
- Fluid Type: Water-based coolant
- Variable flow, electronically adjustable pressure
- Touchscreen smart control
- 70 gallon reservoir
- Dual 5-micron filtration (10 micron optional)
- 230 VAC
- Caster wheels
- 2-year warranty

Pump Options

- 16 x 1: Single 16 GPM piston pump
  2 port standard
- 8 x 1: Single 8 GPM piston pump
  Single port standard, 2 port optional
- 8 x 2: Dual 8 GPM piston pumps
  Independently controlled, separate ports. 2 port optional per outlet



INCLUDED WITH YOUR SYSTEM

Part	Description	Quantity		
		8x1	8x2	16x1
1	High-pressure extension hose	1	2	2
2	24 Pin/cable assembly (includes four M5 mounting bolts and locking washers)	1	1	1
3	3/8" and 1/2" JIS/BSPP fittings for mounting	1 each	2 each	2 each
4	3/8" and 1/2" JIC fittings	1 each	2 each	2 each
5	3/8" and 1/2" JIS sealing cones	1 each	2 each	2 each
6	Run relays (115V, 230V, 24V)	1	2	1
7	Terminals (bag of ~50. Includes ferrules and fork terminals)	1	1	1
8	3-pole breaker	1	-	-
9	Extra install wire	-	-	-
10	*Feed/relief kit	1	1	1
11	2" Overflow hose kit	1	1	1



1



2



3



4



5



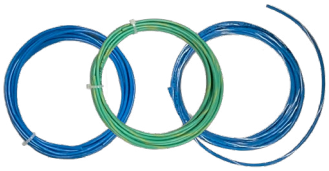
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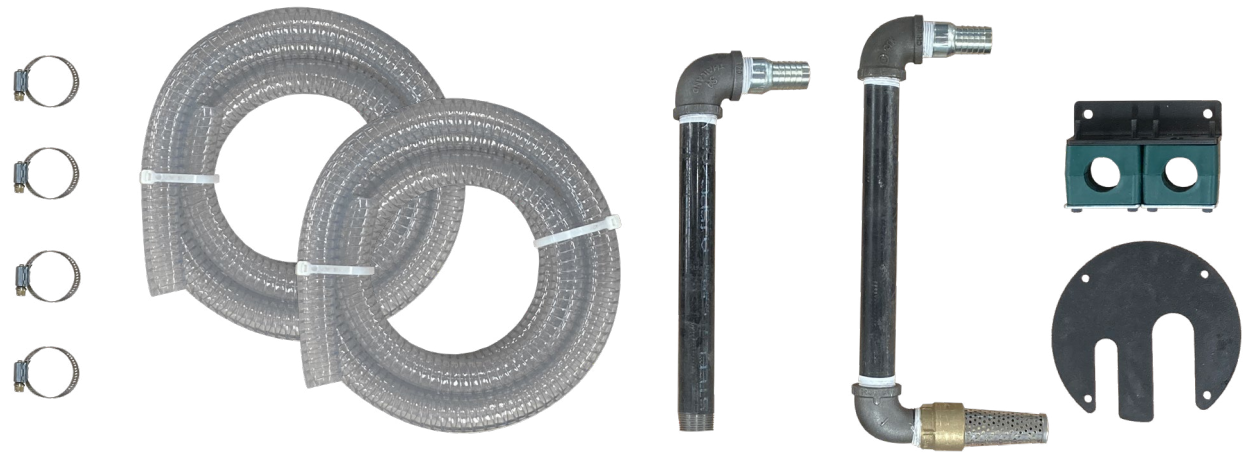
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INCLUDED WITH YOUR SYSTEM

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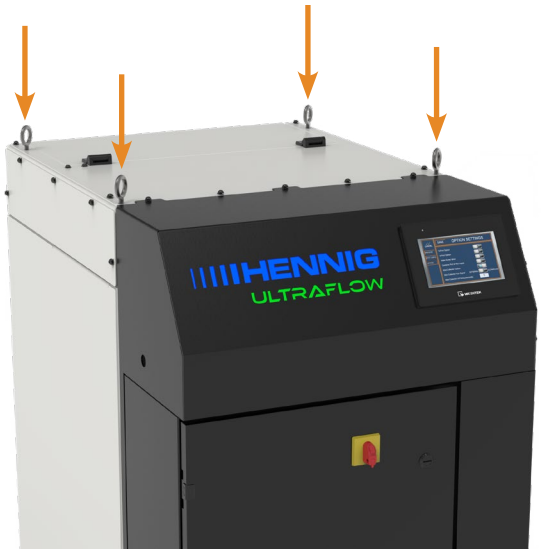
**The 8x1 system has a smaller relief pipe, mount, and plate (pictured: 8x2/16x1 systems)*

11



LIFT POINTS

The top of the system has four 3/8-16 threaded holes. Use all four eye bolts when lifting the system. Eye bolts and lifting bracket are included and installed on new systems.



Installing/removing the eye bolts

The installation and removal of eye bolts may seem straightforward, but it is critical to follow the correct procedure to avoid damaging the system. The system includes a removable lifting bracket, which is essential for lifting the unit safely. Please adhere to the steps below for installing and removing the eye bolts and the lifting bracket:

1. Access the Hidden Lifting Bracket

Open the top cover to expose the hidden lifting bracket (1).

2. Remove the Eye Bolts and Lifting Bracket

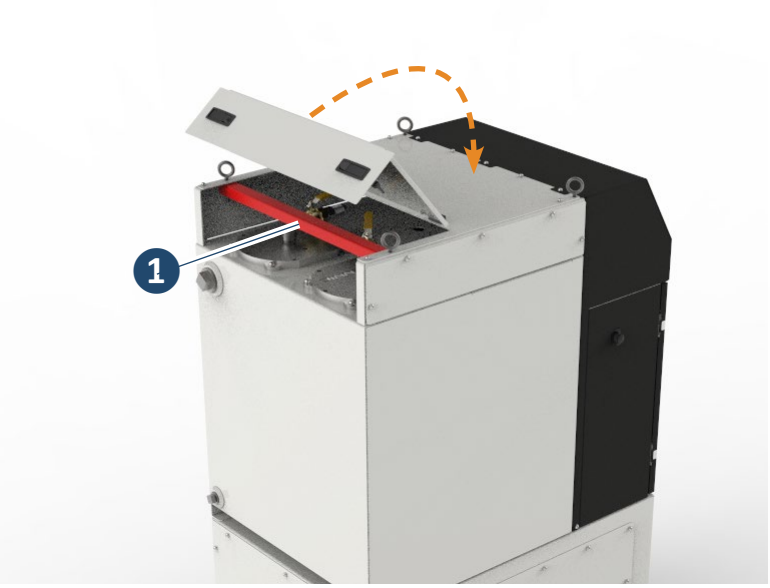
Hold the lifting bracket securely with one hand while removing the eye bolts, as the bolts are what secure the bracket to the system.

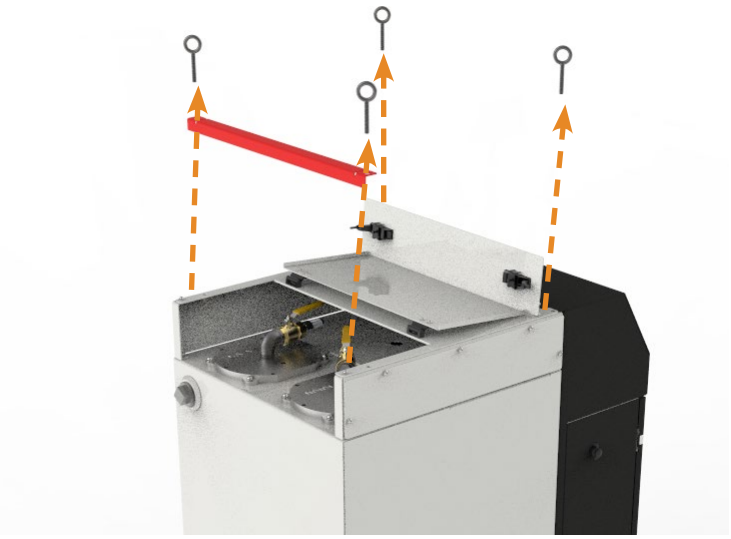
Important: *Allowing the bracket to drop onto the system is not recommended and may result in damage.*

3. Retain the Lifting Bracket

Do not discard, misplace, or lose the lifting bracket. The system cannot be lifted without this bracket.

NOTE: ANY DAMAGE INCURRED DURING LIFTING WITHOUT THE BRACKET IS NOT COVERED BY THE WARRANTY.





FEED/RELIEF PIPE INSTALLATION

1. Find a suitable location on the coolant tank to pull coolant.

Coolant must be pulled from the clean side of the tank. If no suitable location can be found, do one of the following:

- Remove the pump that's being replaced by the UltraFlow system and use that space for the feed/relief mount.
- Cut a new hole into the coolant tank.

NOTICE: Keep coolant pick-up area in machine tank clean of chips and/or swarf. Excessive chips and/or swarf will cause premature clogging of filter bags and may lead to overflow of swarf into the high-pressure coolant tank, causing damage to switches, valves, and/or pumps.

2. Install the feed/relief mount.

Drilling may be required if the existing tank holes don't line up or none are available.

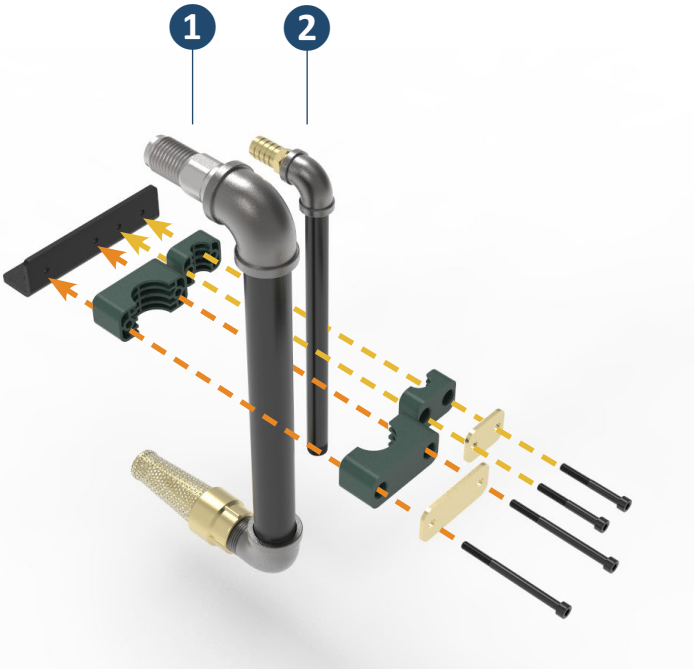
3. Attach the feed and relief pipes to the mount.

Ensure the barb fittings are at the top.

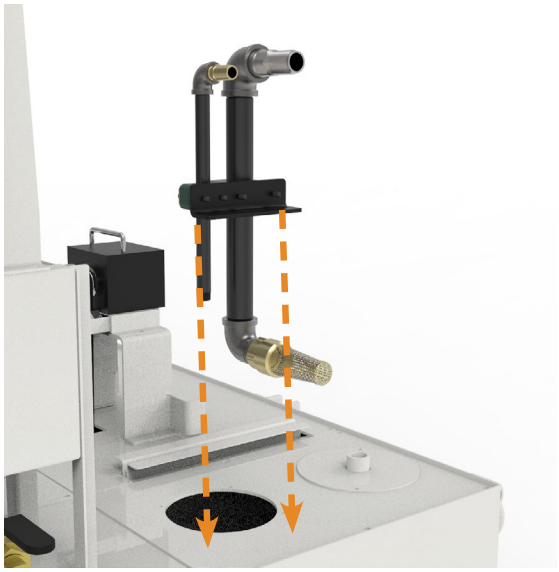
1 Feed pipe
Adjust height so the foot valve is close to the bottom of the tank but not making contact.

2 Relief pipe
Adjust height so that the opening is submerged roughly 2" to reduce foaming the coolant.

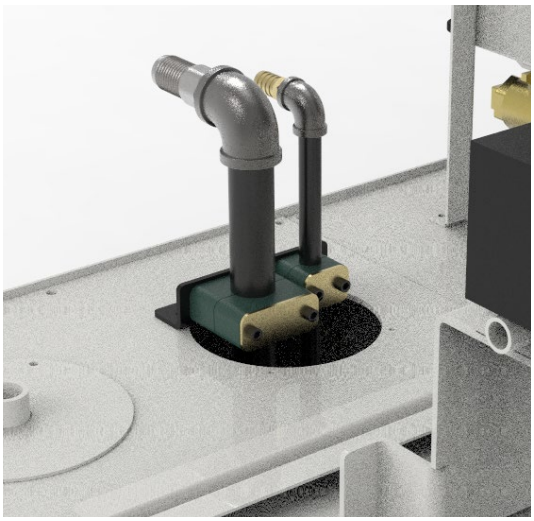
The size of the feed pipe and relief pipe are based on the system you're using.
8x1: relief line is smaller than the feed line
8x2, 16x1: feed and relief lines are the same size



Feed/Relief pipe installation



Feed/Relief mount installation



Feed/Relief pipe installed

CONNECT COOLANT HOSES

1. Connect the coolant feed hose.

Add hose from T-assembly to the feed pipe on the coolant tank.

2. Connect the relief hose.

Connect one end of the relief hose to the relief pipe.

3. Connect the high-pressure hose(s).

8x1 (one hose): Connect one end of the hose to the upper high-pressure outlet on rear of the UltraFlow, and the other end to the high-pressure through-spindle line on the machine tool.

8x2, 16x1 (two hoses): Connect one end of the first hose to the upper high-pressure outlet on rear of the UltraFlow, and the other end to the high-pressure through-spindle line on the machine tool. Connect one end of the second hose to the lower high-pressure outlet on the rear of the UltraFlow, and the other end to a second high-pressure hose from the machine tool.

A high-pressure hose may need to be custom made depending on length and fittings that come with the machine.

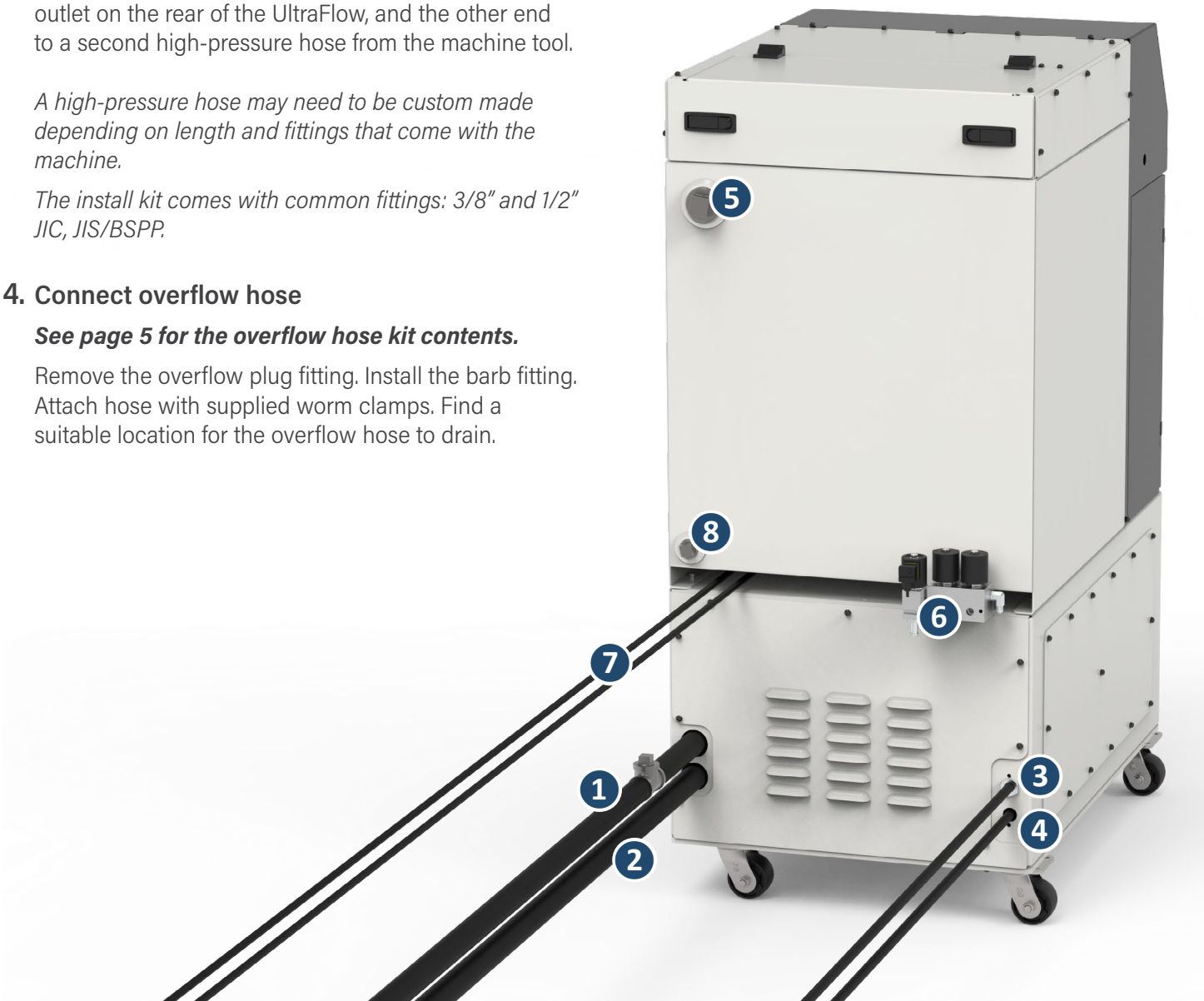
The install kit comes with common fittings: 3/8" and 1/2" JIC, JIS/BSPP.

4. Connect overflow hose

See page 5 for the overflow hose kit contents.

Remove the overflow plug fitting. Install the barb fitting. Attach hose with supplied worm clamps. Find a suitable location for the overflow hose to drain.

1. Coolant feed
2. Relief out
3. High-pressure out (upper)
4. High-pressure out (lower)
5. Overflow plug
6. 2 Port with Index Dump Valve (optional)
7. Power/interface cables
8. Drain plug



CONNECTING POWER/ELECTRICAL CONNECTIONS

System	Power Supply Source	Signals	System Amps	Notes
			230V	
8x1	10-4 SOOW cable	24 Pin connector	20	Breaker provided to power from the machine. Can be a separate drop (25A) if the machine does not have enough overhead.
8x2, 16x1	6-4 SOOW cable	24 Pin connector	40	Separate drop required in most cases (50A). If the machine has enough overhead, a drop is not required.

24 Pin connector mounting

1. Find a suitable location for the 24 Pin connector housing.

The connector (included in the install kit) should be within reach of the cable coming off the UltraFlow while leaving slack so the UltraFlow can be moved around without disconnecting.

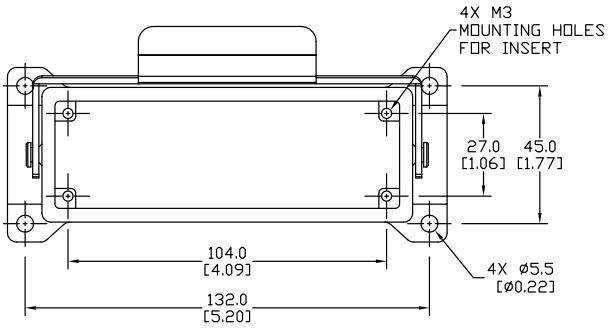
2. Mount connector to the machine.

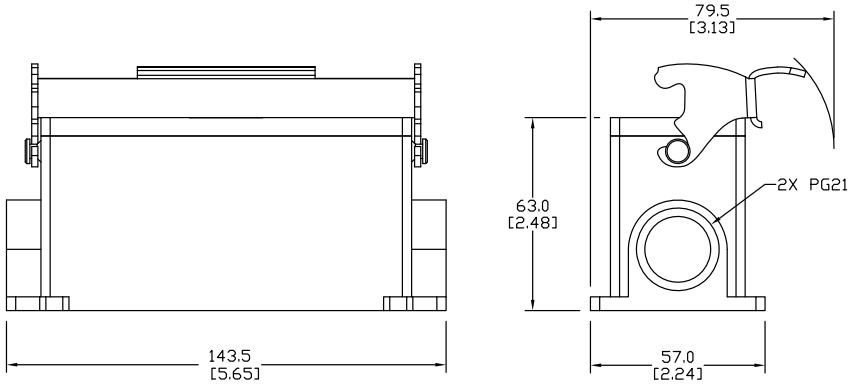
Use the diagram below for mounting bracket dimensions, and mount the 24 Pin connector to your machine.

3. Prep for electrical installation.

Determine the wire routing and wire length from the connector to the machine's electrical box. Ensure wires can be safely placed away from moving parts so they don't get damaged.

Connector comes with whip/pigtail pre-wired. If whip/pigtail isn't long enough, extend on your own or contact Hennig for a new/longer whip.







24 Pin connector mounted to CNC enclosure, shown with male connector attached.

CONNECTING POWER/ELECTRICAL CONNECTIONS

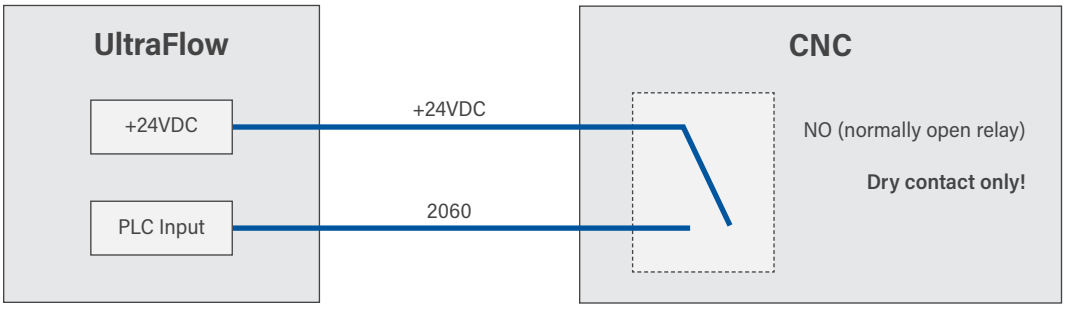
Note: The relay is used to trigger the run signal. Typically the 230V coil relay is used, it can be triggered from the through spindle coolant contactor. If a contactor is not present in the machine a 24V relay can be used.

Electrical connections (interface cable pinout)

Wire	PIN	Description	Wire Size	Color
+24VDC	1	+24VDC power (UltraFlow)	20 AWG TFFN	BLU
2060	2	Run signal 1 from machine	20 AWG TFFN	BLU
+24VDC *(8x2)* **SP1** *(16x1, 8x1)*	3	+24VDC power (UltraFlow) Spare 1	20 AWG TFFN	BLU
2070 *(8x2)* **SP2** *(16x1, 8x1)*	4	Run signal 2 from machine Spare 2	20 AWG TFFN	BLU
ESP1	5	E-stop signal 1	20 AWG TFFN	BLU
ESP2	6	E-stop signal 2	20 AWG TFFN	BLU
ESP3	7	E-stop signal 3	20 AWG TFFN	BLU
ESP4	8	E-stop signal 4	20 AWG TFFN	BLU
2250	9	Valve for port 1	20 AWG TFFN	BLU
2260	10	Valve for port 2	20 AWG TFFN	BLU
2130 *(8x2)* **SP3** *(16x1, 8x1)*	11	Valve for port 3 Spare 3	20 AWG TFFN	BLU
2150 *(8x2)* **SP4** *(16x1, 8x1)*	12	Valve for port 4 Spare 4	20 AWG TFFN	BLU
2280	13	Mist flow run	20 AWG TFFN	BLU

Wire	PIN	Description	Wire Size	Color
M-COM	14	Machine common	20 AWG TFFN	BLU
A-COM	15	Alarm common from machine	20 AWG TFFN	BLU
A-NO	16	Alarm N.O.	20 AWG TFFN	BLU
A-NC	17	Alarm N.C.	20 AWG TFFN	BLU
2270	18	Indexing valve signal	20 AWG TFFN	BLU
FIN-C	19	M-code finish common	20 AWG TFFN	BLU
FIN-S	20	M-code finish signal	20 AWG TFFN	BLU
2210	21	M-code pressure select 1	20 AWG TFFN	BLU
2220	22	M-code pressure select 2	20 AWG TFFN	BLU
2230	23	M-code pressure select 3	20 AWG TFFN	BLU
2240	24	M-code pressure select 4	20 AWG TFFN	BLU
PE	PE	Earth ground	16 AWG TFFN	GRN/YEL

Run diagram



CONNECTING POWER/ELECTRICAL CONNECTIONS

8x1: Can be wired to pull power from the machine tool if 25A is available. If powered separately from the machine, a 25A drop is required.

8x2, 16x1: Due to the high load, a dedicated 50A drop is typically required (if machine has enough overhead a drop is not required).

Cabinet wiring

Steps marked with an asterisk apply to the 8x1 only.

1. **Route wires through to the machine's electrical box.**

* 2. **Install the 3-pole breaker and relay.**

Locate an open slot in the CNC's electrical box and mount the breaker and relay.

* 3. **Supply 230 volt, 3-phase power to the top of the breaker.**

* 4. **Feed power cable into the electrical box and to the bottom of the breaker.**

Locate and attach black wires R, S, T to the bottom of the breaker.

5. **Run interface cables to the relay.**

Locate and attach blue signal wires (2060, +24VDC) from the 24 Pin connector to the COM and NO (normally open) on the supplied relay.

- +24VDC to COM
- 2060 to NO

The 8x2 system requires a second run signal. Wiring is the same as above, but the signal is 2070.

6. **Connect machine signal to the relay.**

Option A: 230V relay. Power 230V relay from existing coolant contactor.

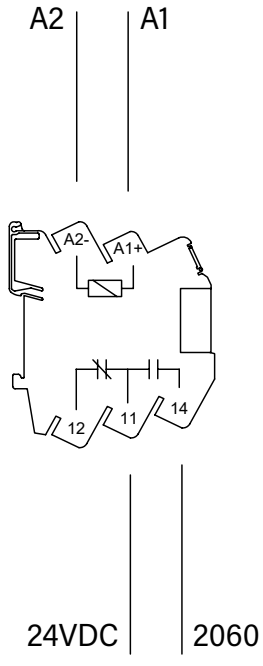
- Wire U to A1
- Wire W to A2

Option B: 24V relay. Locate the 24V signal for the m-code you would like to trigger the system.

- Wire 24V m-code signal to A1
- Wire 0V of the machine to A2

Option C: 115V relay (If your machine runs off 115V or an external solution to trigger the system is desired.)

- Wire L to A1
- Wire N to A2



CONNECTING POWER/ELECTRICAL CONNECTIONS

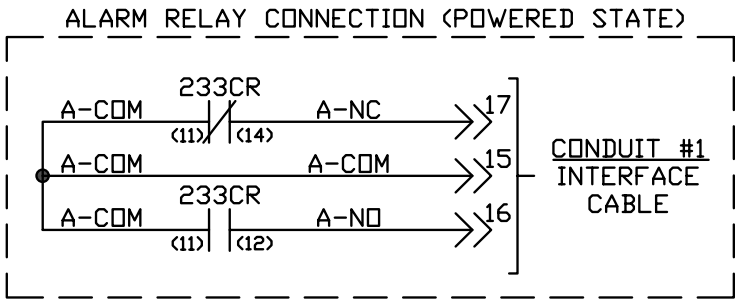
Alarm signal wiring

Connect CNC alarm signal to the UltraFlow.

Locate and attach blue wires (A-NC/A-NO, A-COM) from the UltraFlow relay to the CNC machine.

- A-COM to CNC +24VDC
- A-NC/A-NO to CNC alarm signal

The UltraFlow Alarm circuit is a dry contact relay. The A-COM can be used with either the A-NC or the A-NO depending on machine requirements and signal type. In the event of a power loss the Alarm signal will trigger.

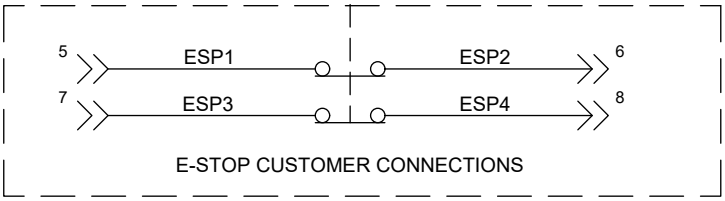


UltraFlow PLC alarm schematic. Drawing shows the relay at rest.

E-stop wiring

Connect E-stop signal to the UltraFlow.

Two N.C. dry contacts are provided through system e-stop circuitry.



Optional System Wiring

Connect Machine Common (0V)

Connect machine common (0V) to the M-COM wire.

Connect Optional Components

Connect machine +24VDC to trigger any of the options you want to run.

Wire	PIN	Description	Wire Size	Color
2250	9	*Valve for port 1	20 AWG TFFN	BLU
2260	10	*Valve for port 2	20 AWG TFFN	BLU
2130 *(8x2 only)*	11	*Valve for port 3	20 AWG TFFN	BLU
2150 *(8x2 only)*	12	*Valve for port 4	20 AWG TFFN	BLU
2280	13	*Mist flow run	20 AWG TFFN	BLU
M-COM	14	Machine common	20 AWG TFFN	BLU
2270	18	*Indexing valve signal	20 AWG TFFN	BLU
[1]FIN-C	19	M-code finish common	20 AWG TFFN	BLU
[1]FIN-S	20	M-code finish signal	20 AWG TFFN	BLU
2210	21	M-code pressure select 1	20 AWG TFFN	BLU
2220	22	M-code pressure select 2	20 AWG TFFN	BLU
2230	23	M-code pressure select 3	20 AWG TFFN	BLU
2240	24	M-code pressure select 4	20 AWG TFFN	BLU

*Optional add-on signals.

[1] Fin-C and Fin-S will be momentarily connected when an option receives a signal if the finish signal check box is on in settings. See page 24 for more information regarding the FIN signals.

PRIMING THE SYSTEM

1. **Verify system is ready for priming.**
   Ensure all filters, O-rings, hoses, and clamps are in place and properly sealed.

2. **Remove fill port plug.**
   The fill plug is located on the coolant feed hose's "T" connector on the back of the UltraFlow system.

3. **Fill with coolant.**
   Pour coolant/water into the fill port. Ensure all air bubbles are removed from the pump and the coolant feed hose.

4. **Replace fill port plug.**
   Use thread tape to ensure the plug is properly sealed.



Fill port plug

CHECK SYSTEM PHASING

IMPORTANT! *Before first start-up, follow the steps below to check the rotation of the feed pump to confirm system phasing is correct.*

Note: The system comes with a feed pump switch under the filter housing cover. The feed pump switch is set to "off" when shipped so it will not run dry on initial power up. Once the system is installed, the switch should be left on for normal operation. It should only be switched off for installation and troubleshooting.

1. Remove cover panel

8x1, 8x2

Using a 6mm hex key, remove the bolts holding the cover panel on the right of the system.

16x1

Using a 6mm hex key, remove the bolts holding the cover panel on the front of the system.

The panel holds two fans which are wired to the UltraFlow, be careful not to damage the wires when removing.

2. Power up system.

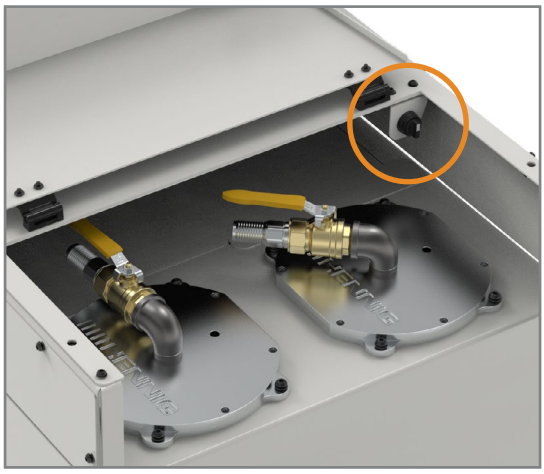
If not already done, connect the 24 Pin connector and turn on the main disconnect (see page 9 for 24 Pin installation).

3. Manually run the feed pump.

There are two ways to run the feed pump:

- Turn on the feed pump switch to run the feed pump (located under the filter cover, see image for reference)
- Manually slide the contact on the feed pump contactor (MS126). ***Only authorized electricians should attempt this method.***

If coolant is not being pulled up the line into the feed pump, turn the system off and repeat the priming procedure (page 13) until the pump is able to pull coolant from the tank.



Feed pump switch location

4. Check the pump rotation.

Looking through the rear guard, make sure the feed pump fan is turning the same direction as the arrow sticker on the pump. If the fan is not turning the same direction as the arrow, stop the feed pump, disconnect power from the system, and swap two of the main black wires (going into the top of the main disconnect inside the UltraFlow electrical cabinet). Run the pump to verify the turning direction is correct.

5. Enable the feed pump.

Turn on the system and then turn on the feed pump switch. The system will automatically fill the tank and turn the feed pump on/off as needed.

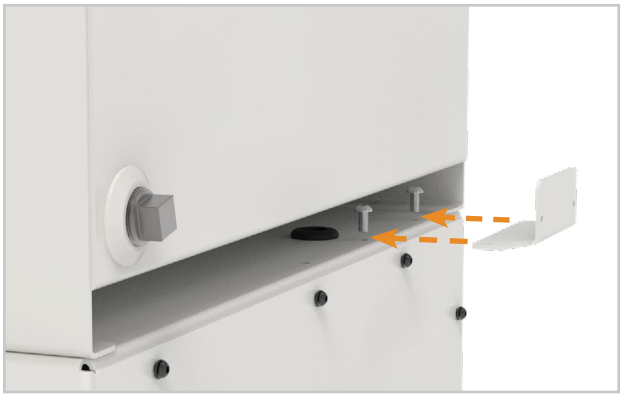
2/3/4 PORT INSTALLATION (OPTIONAL)

Each UltraFlow system comes with a default number of ports, depending on the pump setup. If your application requires additional ports, those can be added. See below for port options and installation instructions.

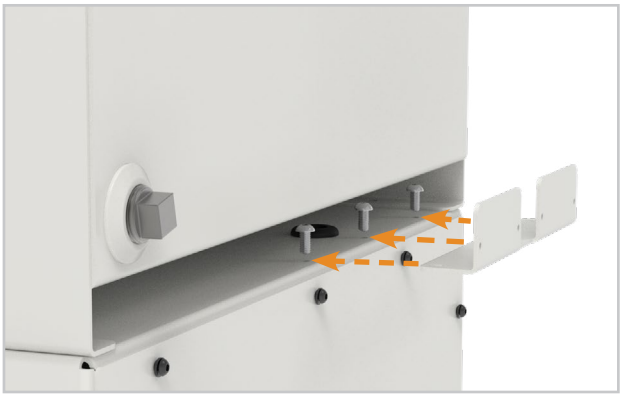
System	# of Ports (standard)	# of Ports (maximum)	Notes
8x1	1 port	2 ports	8x1 UltraFlows have one pump, so they are 1 port by default. If additional ports are required, the system allows for a 2 port option.
8x2	2 port	up to 4 ports	8x2 UltraFlows have two pumps, so they are 2 port by default. If additional ports are required, the system allows for a 3 port or a 4 port option.
16x1	2 port	2 port	16x1 UltraFlows have one pump, but are 2 port by default. Additional ports are not recommended for the 16x1 system.

1. Install manifold bracket

Use M8x16 bolts to secure the mounting bracket to the back of UltraFlow.



2-port and 3-port bracket (8x1, 8x2)

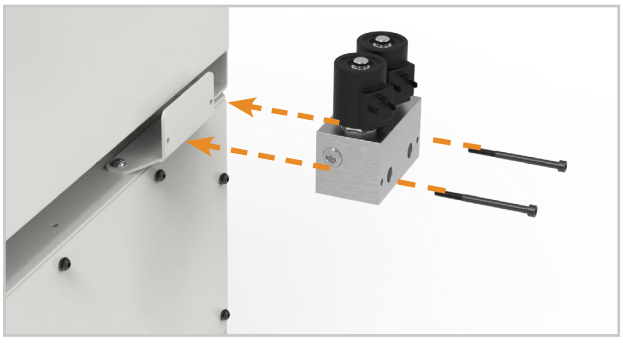


4-port bracket (8x2 only)

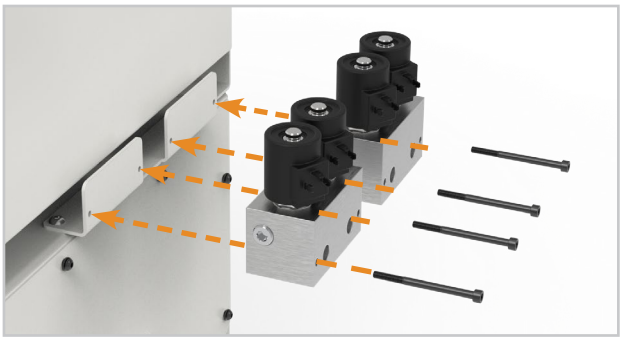
2. Mount the manifold to the bracket

Use M6 bolts to mount the manifold(s) to the bracket (2 and 3 port have one manifold, 4 ports have two manifolds).

Note: If adding a dump valve to your manifold, install it before mounting the 2-port manifold. See pages 18-20 for dump valve installation.



2-port and 3-port manifold (8x1, 8x2)



4-port manifolds (8x2 only)

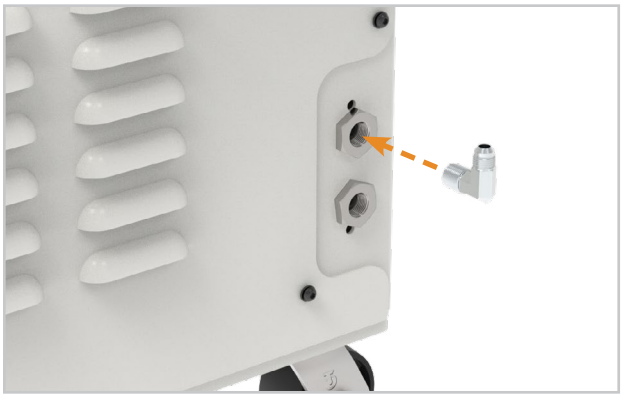
2/3/4 PORT INSTALLATION (OPTIONAL)

3. Install hose fitting on the high-pressure output and manifold

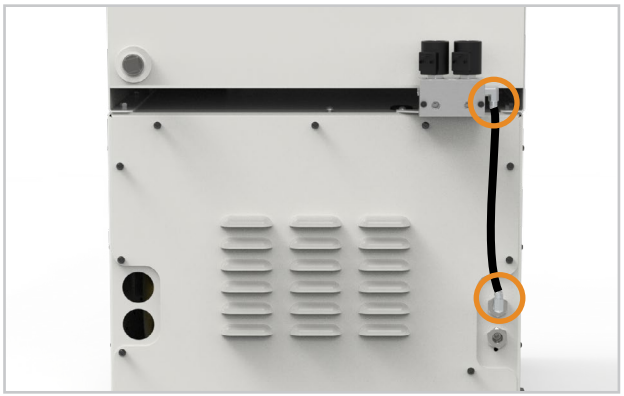
Install 90° fitting(s) on the high-pressure output(s) of the UltraFlow. Then, attach hose(s) to the output fitting and the manifold input fitting(s).

8x1 (2 port upgrade), 8x2 (3 port upgrade)

Install 90° fitting on the upper high-pressure output on the UltraFlow. Then, attach hose to the output fitting and the manifold input fitting.



2-port 90° fitting



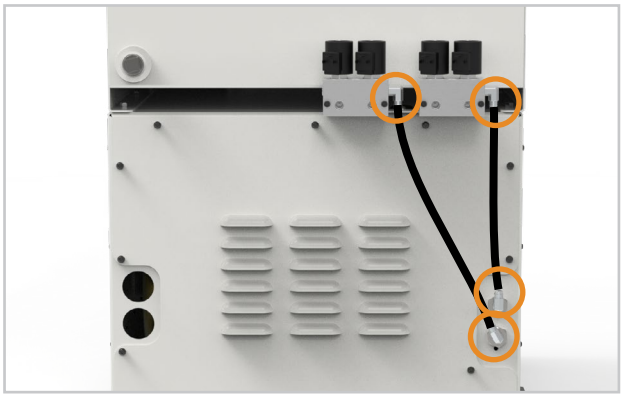
2-port hose install

8x2 (4 port upgrade)

Install 90° fittings on the upper and lower outputs of the UltraFlow. Then, attach hose to each output fitting and the manifold input fitting.



4-port 90° fittings

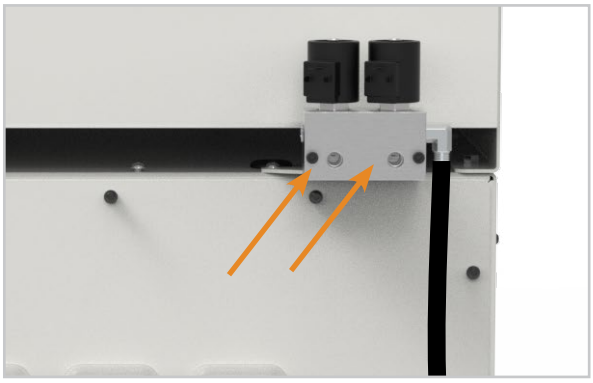


4-port hose install

2/3/4 PORT INSTALLATION (OPTIONAL)

4. Install hoses on manifold

Install desired output fittings into manifold outputs and connect hoses from the machine.
The manifold comes with a second set of fittings to ensure you have the right connection for your standard hoses.





3/8" and 1/2" BSPP/JIS fittings



3/8" and 1/2" JIC fittings



3/8" and 1/2" JIS sealing cones

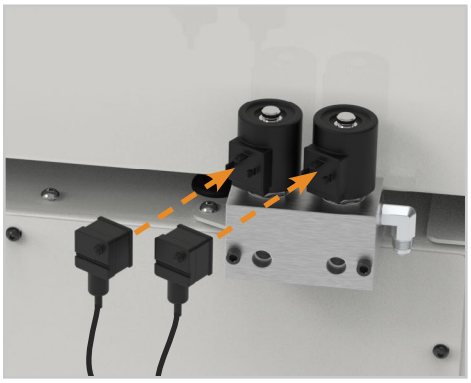
5. Remove side panel for electrical box access

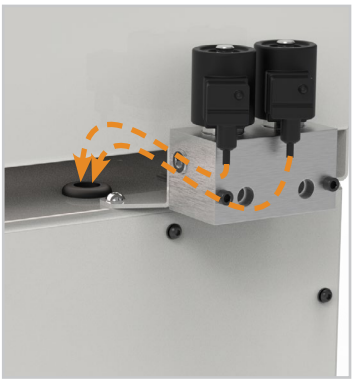
Remove the M6 bolts on the left side panel for access to the connector on the bottom of the electrical box.

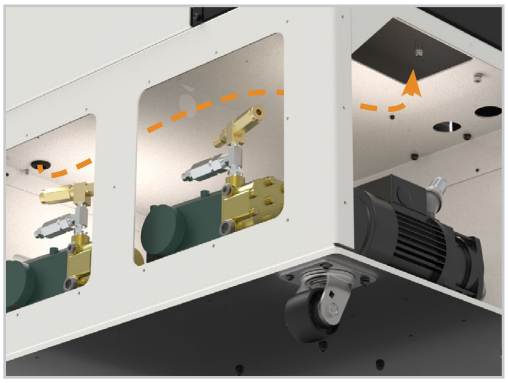


6. Install cables on manifold and electrical box

Connect cables to the manifold coils and feed plug into the UltraFlow system through the grommet near the manifold mounting bracket. Remove the plug cap on the bottom of the electrical box, and plug the cable into it.







7. Enable HMI Status lights for the additional ports.

If the additional ports have been added to the system, status lights will be visible on the main page. See page 25 for more information.

INDEX DUMP VALVE INSTALLATION (OPTIONAL)

The Dump Valve can be installed either on the extra port of a 2-port manifold with the provided 90° fitting or directly off the main output with the provided T-fitting.

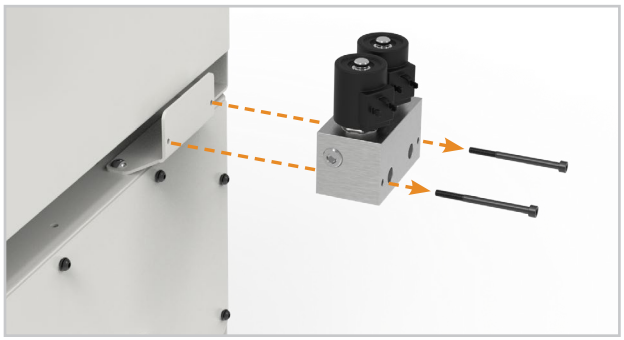
8x1, 8x2, 16x1 (without port options)
Dump valve mounts to the upper high-pressure output on the rear of the UltraFlow.

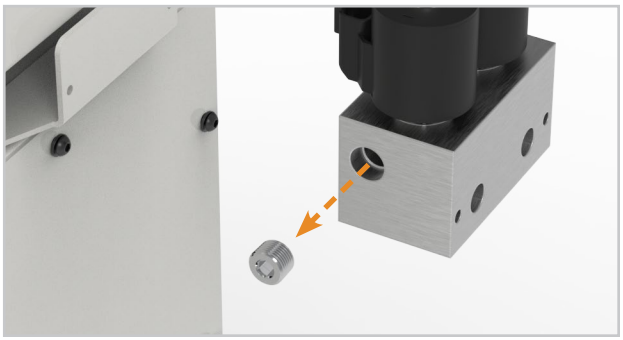
8x1 (with 2 port option)
Dump valve mounts to the manifold.

8x2 (with 3/4 port option)
Dump valve mounts to the manifold. If using the 4 port option, only one manifold can have a dump valve. For dump valves on both manifolds, contact Hennig.

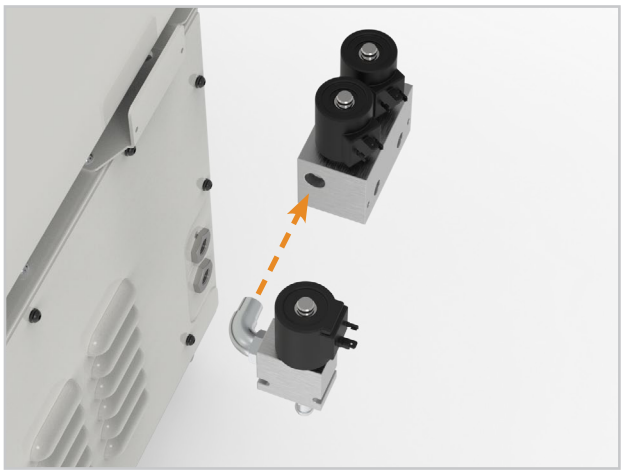
Installing dump valve on the manifold

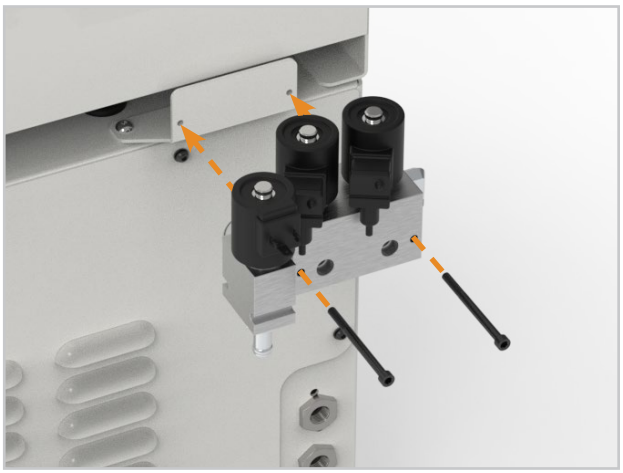
1. **Remove the manifold (shown with 2/3 port manifold, the process is the same for the 4 port manifold)**
   If not already removed, remove the manifold from its mounting bracket and remove the 3/8" NPT plug.





2. **Install dump valve on the manifold**
   Add thread tape to the fitting and install dump valve on the manifold, then install manifold onto its mounting bracket.





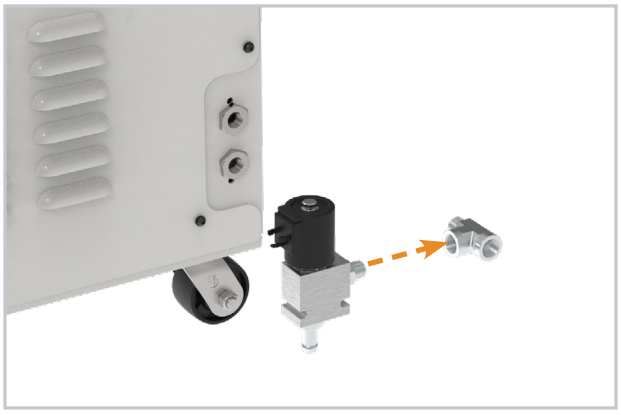
INDEX DUMP VALVE INSTALLATION (OPTIONAL)

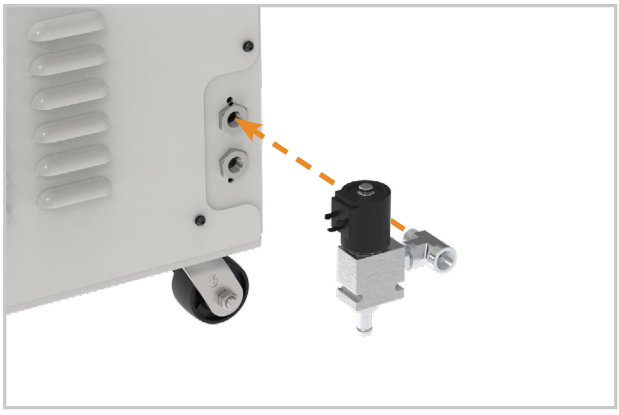
Installing dump valve on the high-pressure output

1. **Remove the high-pressure hose from the output fitting**



2. **Install the dump valve**
   Add thread tape to the fitting on the dump valve and install dump valve on the T-fitting. Then install the dump valve/T-fitting onto the high-pressure output fitting.





3. **Install the high-pressure hose on the T-fitting**



4. **Install drain hose**
   Attach the drain hose to the barb on the bottom of the dump valve, and secure the other end of the drain hose to the coolant tank.

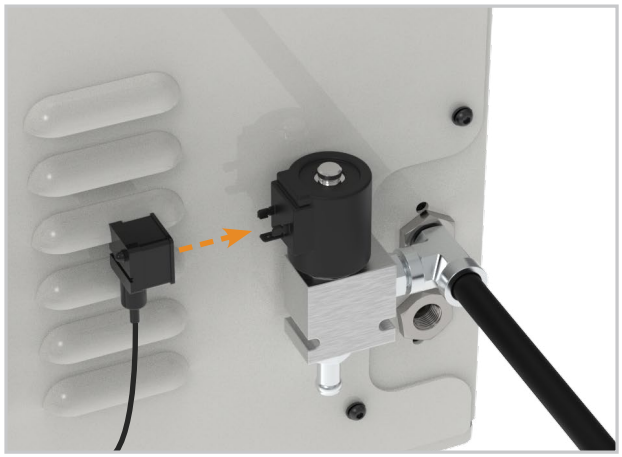


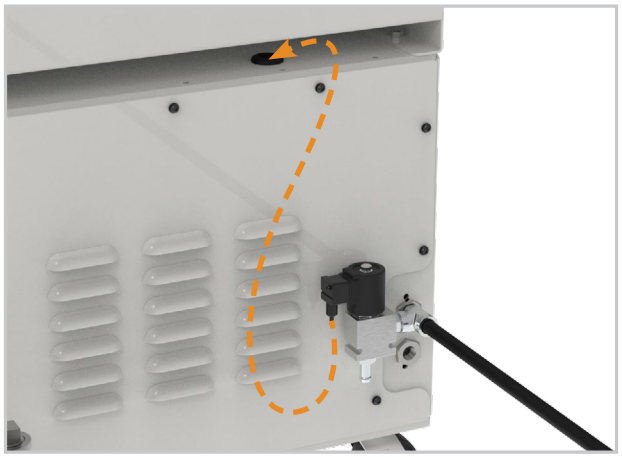
INDEX DUMP VALVE INSTALLATION (OPTIONAL)

Installing dump valve electrical connections

1. Attach cable to dump valve

Attach cable to the connector on the dump valve, then feed the cable through the grommet on the back of the UltraFlow and to the electrical cabinet.

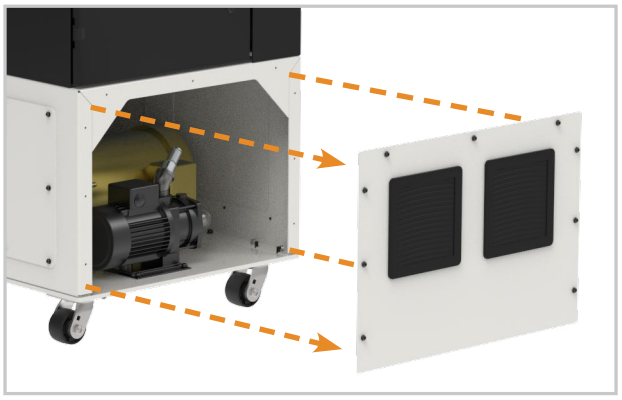


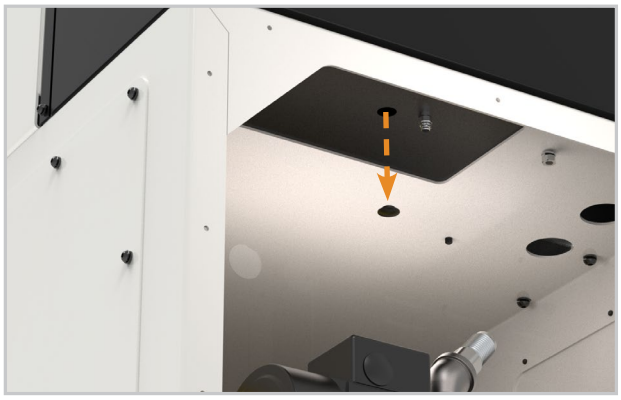


2. Attach cable to electrical box

Remove the front lower panel. Remove plug on the bottom of the electrical box and install the provided grommet, then feed the cable into the electrical box. Connect electrical inside the UltraFlow electrical box to the terminals below:

- Yellow/green to PE/GND
- Connect wires 1 and 2 to terminals 11 and 14 on the 236CR relay (dry contact)





3. Connect index signal to the machine tool

Reference table/drawing on page 12 for signal wiring/electrical connections.

4. Enable HMI Status lights for the dump valve

If the Index Dump Valve option has been added to the system, status lights will be visible on the main page. See page 24 for more information.

MIST COLLECTOR INSTALLATION (OPTIONAL)

If installing a Hennig MistFlow mist collector to your UltraFlow system, follow the steps in the appropriate MistFlow manual for adding it to your high-pressure system.

Use the QR codes below or visit our website to find your manual:
hennigworldwide.com/pdf-library

MistFlow 400

MistFlow 800

MistFlow 1200

OPERATION

How it works

The UltraFlow system is equipped with our Adaptive Pressure Control, which regulates the flow of coolant to output the desired pressure regardless of the orifice size in the tool (within capabilities of the pump). Before running your UltraFlow system, ensure the feed pump switch is set to "on" (see page 14 for feed pump switch location).

Each box on the HMI display shows are particular function of the UltraFlow system. Below is a list describing what each box does.

1. System status
2. System pressure settings
3. Alarms
4. System Status/Options lights
5. System settings



Selecting system pressure

To adjust the pressure settings, use 1 of 2 ways:

1. Tap the number in the pressure settings box (box 2) field to activate the keyboard. When the keyboard pops up, enter the desired pressure setting and tap "Enter".

2. Use the slider to adjust the setting (box 2).

8x1



16x1



8x2

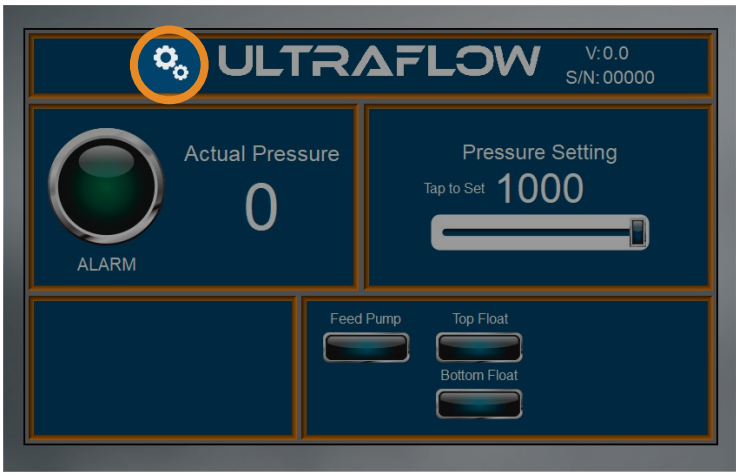


OPERATION

Configuring Your Pressure Settings

To customize your pressure settings, tap the "gears" icon on the home screen. To change any of the default settings, tap the setting you want to adjust to activate the keyboard and type in your desired pressure.

Pressures shown below are the factory defaults.

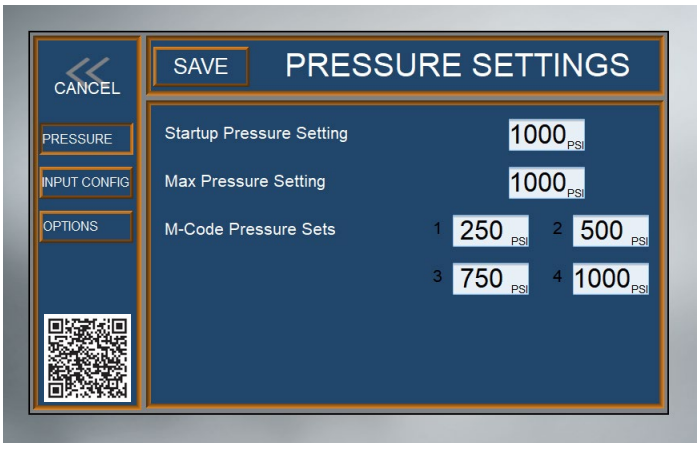


Startup pressure
The systems pressure set at startup (minimum 100 psi)

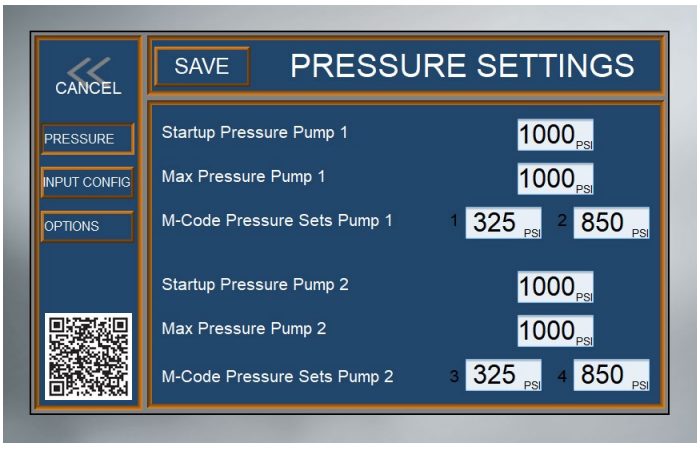
Max Pressure
Max allowed selectable pressure (up to 1,000 psi)

M-code pressure
The pressure the system will be set to when M-code is selected

8x1, 16x1
Single pump

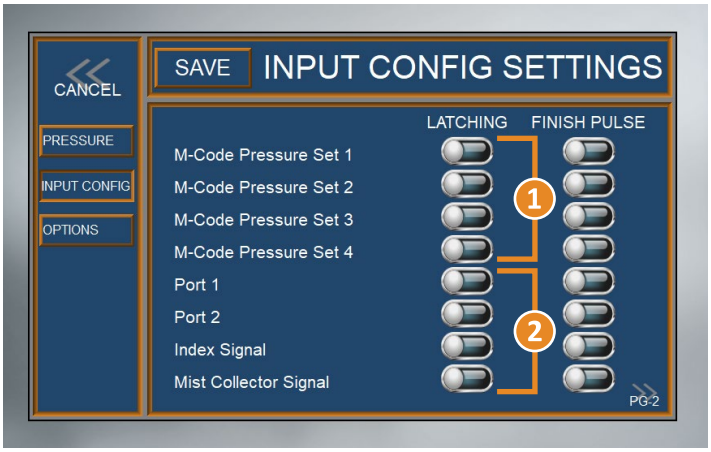


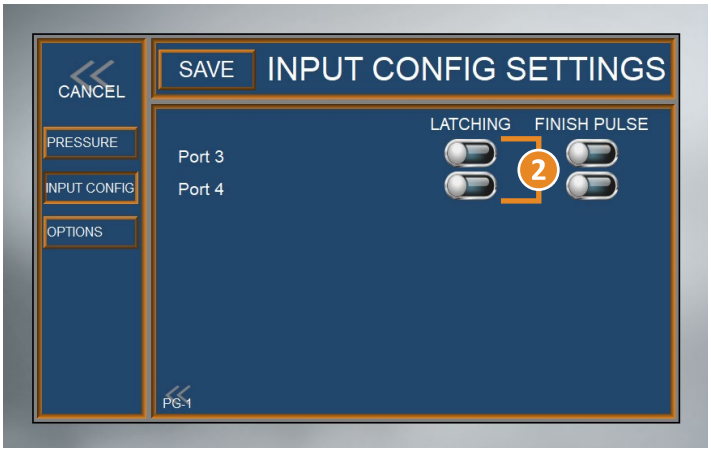
8x2
Dual pump, each pump gets 2 m-codes per pump



OPERATION

Input Configuration





Latching Option 1
By default, these signals are looking for a pulse from the CNC control if machine control has latching signal. Turn on the latching option and the system will read the signal on activation and deactivation.

Latching Option 2
By default, these signals should be held on so long as the option is needed. If the machine control outputs a pulsed signal, turn on the latching and the signal will hold on. A second pulse will turn the signal off.

Note: Ports 3 and 4 apply only to the 8x2 system

Finish Pulse Option
If turned on, the system will close the finish circuit momentarily when the signal triggers, sending a finish signal pulse to the machine.

HMI Status lights

Shows whether the feed pump switch and other options are currently active. To activate/deactivate any of the features or options, tap on the Settings to open the options.



OPERATION

Options/Accessories Settings

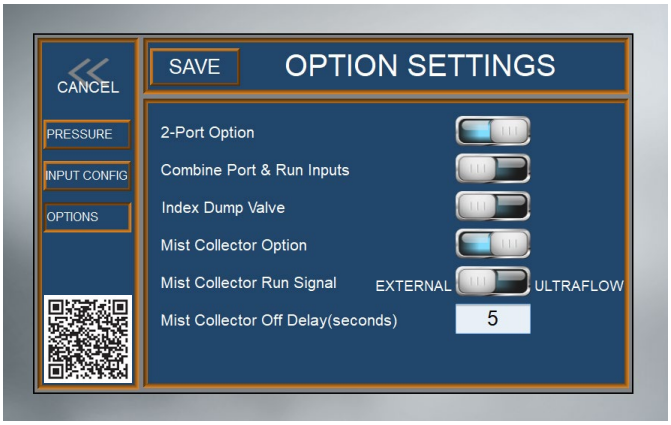
2/3/4 Port Options & Index Dump Valve Option
If a port option has been added to the system these will display status lights on the main page.

Combine Port & Run
Combines the port signal and run signal so when a port is commanded the system will also run.
Note: If the port and run signals are combined, the system only runs from the port signals (run signal 2060/2070 will not be used)

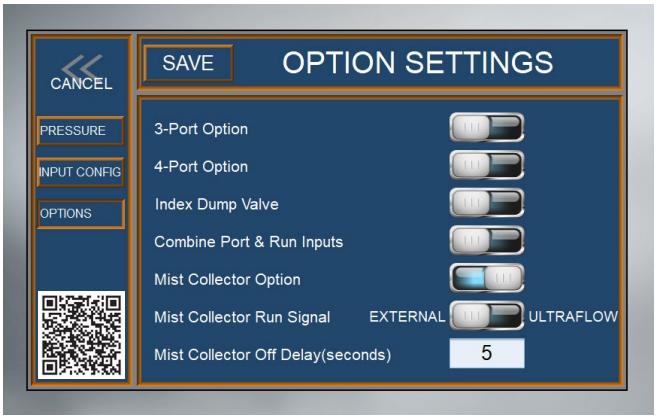
Mist Collector Option
If the mist collector is wired to run through the UltraFlow, the run signal can either be configured through an external signal in the interface cable, or when the UltraFlow is running.

Mist Collector Off Delay
How long the mist collector will run after the signal is dropped.

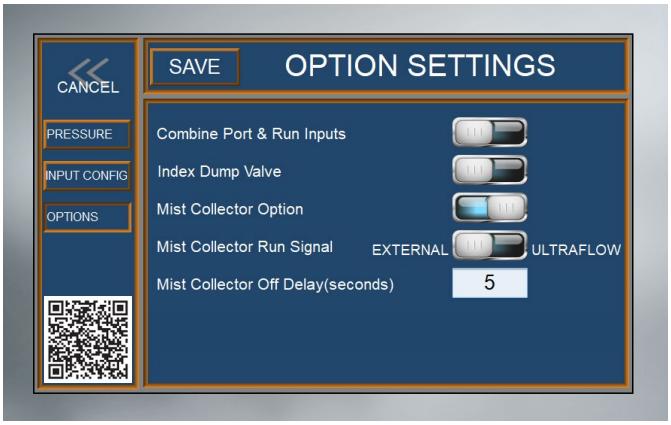
8x1 Options



8x2 Options



16x1 Options



MAINTENANCE

Filter replacement

NOTICE

RUNNING THIS SYSTEM WITHOUT THE CORRECT BAG FILTER IN PLACE COULD HARM THE UNIT AND VOIDS ALL WARRANTIES

To prolong the life of the system and to ensure proper operation, the filter must be replaced every 3-6 months, depending on the application (pre-filter vs no pre-filter, tank cleanliness, etc). If your coolant tank does not filter the coolant, check the UltraFlow filters weekly to ensure filters aren't clogging.

The system uses two filters. To avoid shutting down the system during filter replacement, maintenance should be performed one filter at a time.

1. Open the cover panel.

Using the dual latches on the back of the system, flip open the cover panel.

2. Remove filter cover

Shut off coolant flow to filter by turning the valve handle to the off position. Using a 6mm hex key, remove the M8 bolts (x6) holding the filter cover plate and remove filter cover.

3. Inspect/replace the filter.

Remove the filter by simply lifting it out using the handles built into the top ring of the bag. Inspect the filter and replace if necessary. Before inserting the new filter bag, inspect the cover plate and o-ring for damage or deformation and replace if necessary. Reinsert or replace the filter bag.

4. Reinstall the filter cover plate and cover panel.

Finger tighten the 6 bolts, then tighten bolts with a hex key in a star pattern to ensure a proper seal. Open the valve and close the cover panel.



Top cover panel



Filter cover plate removal



Filter removal

MAINTENANCE

Changing the oil

To prolong the life of the system and to ensure proper operation, the oil must be changed at least once a year, or every 2,000 hours of operation, whichever comes first.

Note: The 8x2 system has two pumps. Oil will need to be changed on both pumps.

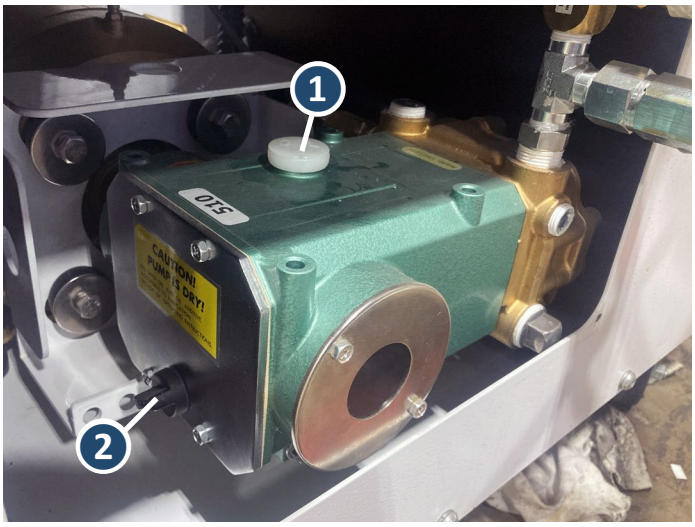
System	Oil Capacity (fl oz)
8x1	19
8x2	19 (per pump)
16x1	37

1. Remove the oil dipstick.
2. Place a small container or pan underneath the oil drain plug.
3. Remove the oil drain plug and completely drain oil.
4. Replace oil drain plug and fill with oil until oil level is between the marks on the dipstick. Use genuine pump oil (part # 8571982).

CAUTION! Do not overfill or underfill, as it will damage the pump.

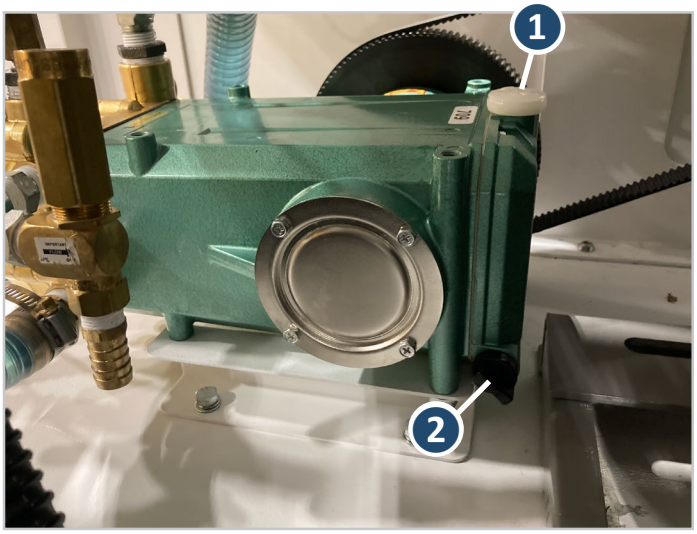
System: 8x1, 8x2

Drain plug on back of pump



System: 16x1

Drain plug on side of pump



1 *oil dipstick* 2 *drain plug*

MAINTENANCE

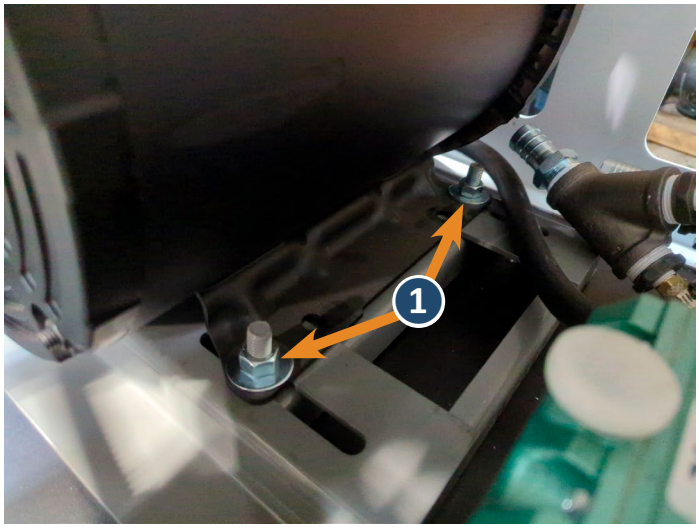
Adjusting belt tension (16x1 only)

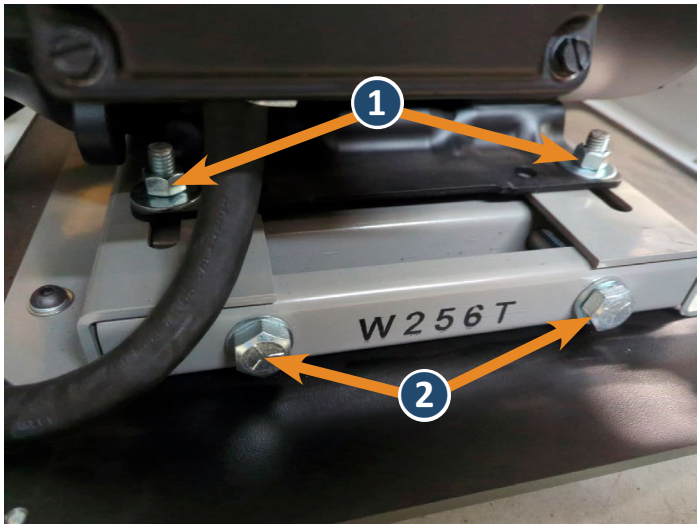
To prolong the life of the system and to ensure proper operation, the belt tension should be checked/adjusted after 100 hours of operation. After the 100-hour inspection, check the belt yearly and adjust tension/replace as needed.

1. Remove rear and left side cover panels.
2. Inspect the belt tension using a belt tension gauge. If belt is too tight or too loose, continue with steps below.

Belt Type	Minimum tension	Maximum tension
	at 7/32" deflection	
New belt	11 lbf	12 lbf
Used belt	8 lbf	9 lbf

3. Loosen the four mounting bolts on the motor (1).
4. Use the adjuster bolts to adjust the belt tension (2):
   Increase tension: Turn the adjustment bolt clockwise
   Decrease tension: Turn the adjustment bolt counter-clockwise
5. Tighten the mounting bolts (1) and verify the belt tension is correct.





1 *mounting bolts* 2 *adjuster bolts*

PARTS LIST

Universal parts (8x1, 8x2, 16x1)

Part #	Description		Quantity		
			8x1	8x2	16x1
880.19008.0066	Touchscreen		1		
880.19008.0067	PLC main module		1		
880.19008.0068	PLC input card		1		
880.19008.0069	PLC output card		1		
880.19008.0073	PLC serial card		1		
880.19008.0071	PLC terminal block		1		
885518	Bag filter basket		2		
881406	Feed pump		1		
885523	Bag filter element (10 micron)		2		
885550	Bag filter element (5 micron)		2		
885524	Bag filter housing o-ring		2		
880.27000.0011	Run relay (230V)	Quantity per system for the relay voltage used.	1	2	1
880.27008.0035	Run relay (115V)		1	2	1
880.27000.0013	Run relay (24V)		1	2	1
8571982	Pump oil		1		

8x1

Part #	Description	Quantity
880.18030.0000	5 HP VFD, 230VAC	1
881404	High pressure pump assembly	1
High-pressure pump seal kit (sold as kit with parts below)		
8571949	Inlet valve	3
8571950	Outlet valve	3
8571951	Seal	3

8x2

Part #	Description	Quantity
880.18030.0000	5 HP VFD, 230VAC	2
881404	High pressure pump assembly	2
High-pressure pump seal kit (sold as kit with parts below)		
8571949	Inlet valve	6
8571950	Outlet valve	6
8571951	Seal	6

16x1

Part #	Description	Quantity
880.18030.0002	15 HP VFD, 230VAC	1
881437	Motor (15 HP)	1
881430	Pump (16 GPM)	1
870917	Belt (motor to pump)	1
Contact Hennig	High-pressure pump seal kit	1

TROUBLESHOOTING

Symptom	Issue	Solution
UltraFlow does not come on when machine tool calls for high pressure coolant.	▪ UltraFlow disconnect switch is off ▪ Machine tool is off ▪ UltraFlow "Run relay" is not functioning	▪ Turn on UltraFlow disconnect switch ▪ Turn on machine tool ▪ Replace "Run relay"
UltraFlow creates too much pressure	The pressure relief valve is adjusted incorrectly	Contact Hennig for adjustment. info@hennig-inc.com
UltraFlow doesn't create enough pressure	▪ The orifice size in the tool is too big to create the desired pressure ▪ The pressure relief valve is adjusted incorrectly	▪ Use a tool with a smaller orifice size ▪ Using a tool with small orifice size, turn the UltraFlow on and adjust the pressure to factory setting of 1,000 psi.
UltraFlow comes on for a few seconds and then shuts off with an alarm	▪ Filters are clogged ▪ UltraFlow has lost prime	▪ Replace the filter. See page 26 for replacement instructions. ▪ Prime the system. See page 13 for priming instructions.
UltraFlow does not stay primed	▪ Machine tool's coolant level is low ▪ Foot valve is not working properly ▪ Feed pump is not working properly	▪ Add coolant to the machine tool ▪ Take apart and clean the foot valve, or replace if necessary. ▪ Check feed pump switch ▪ Check tank float function ▪ Replace feed pump

TROUBLESHOOTING: ALARM SIGNALS

Alarm	Issue	Solution
LOW PRESSURE OUTPUT PRESSURE (PUMP 1 OR 2) *8x2 has two pumps, alarm calls out which pump is having issue*	High pressure pump is not producing pressure or too low of pressure. Alarms to protect pump.	Check hoses feeding high pressure pump, check tank for blockages, debris, restrictions. Also can be caused by very large orifices.
FILL ISSUE, CHECK FEED PUMP	Tank is not filling or is not filling fast enough.	Check tank, check overload, check feed pump rotation, check feed lines and check/clean foot valve in tank.
VFD ERROR	Variable frequency drive has encountered an error.	Note Error code and contact Hennig support.
E-STOP	E-Stop has been pressed	Release e-stop button on the electrical box door, press VFD reset button.
FEED PUMP OVERLOAD TRIP	Feed pump contactor has detected an overload.	Check feed pump for damage. Verify amperage being pulled while running. Should be less than 3.4 amps. Replace pump if needed.
PLC COMMUNICATION LOST **VFD COMMUNICATION LOST**	Communication has been lost for an extended period.	Check communication cables to ensure they are fully seated and not damaged. If issue persists, contact Hennig.

MACHINE CONNECTIONS

This table must be completed prior to finishing installation. Keep sheet with the system after completion.

UltraFlow S/N: _____

Machine Make/Model: _____

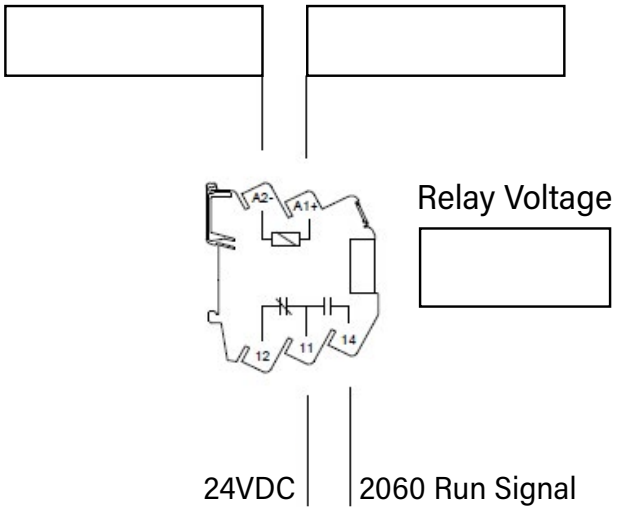
Machine S/N: _____

Wire	PIN	Description	Wire Size	Color	Machine Connection	Notes
+24VDC	1	+24VDC power	20 AWG TFFN	BLU		
2060	2	Run signal 1 from machine	20 AWG TFFN	BLU		
+24VDC *(8x2)* **SP1** *(16x1, 8x1)*	3	+24VDC power Spare 1	20 AWG TFFN	BLU		
2070 *(8x2)* **SP2** *(16x1, 8x1)*	4	Run signal 2 from machine Spare 2	20 AWG TFFN	BLU		
ESP1	5	E-stop signal 1	20 AWG TFFN	BLU		
ESP2	6	E-stop signal 2	20 AWG TFFN	BLU		
ESP3	7	E-stop signal 3	20 AWG TFFN	BLU		
ESP4	8	E-stop signal 4	20 AWG TFFN	BLU		
2250	9	Valve for port 1	20 AWG TFFN	BLU		
2260	10	Valve for port 2	20 AWG TFFN	BLU		
2130 *(8x2)* **SP3** *(16x1, 8x1)*	11	Valve for port 3 Spare 3	20 AWG TFFN	BLU		
2150 *(8x2)* **SP4** *(16x1, 8x1)*	12	Valve for port 4 Spare 4	20 AWG TFFN	BLU		
2280	13	Mist flow run	20 AWG TFFN	BLU		
M-COM	14	Machine common	20 AWG TFFN	BLU		
A-COM	15	Alarm common from machine	20 AWG TFFN	BLU		
A-NO	16	Alarm N.O.	20 AWG TFFN	BLU		
A-NC	17	Alarm N.C.	20 AWG TFFN	BLU		
2270	18	Indexing valve signal	20 AWG TFFN	BLU		
FIN-C	19	M-code finish common	20 AWG TFFN	BLU		
FIN-S	20	M-code finish signal	20 AWG TFFN	BLU		
2210	21	M-code pressure select 1	20 AWG TFFN	BLU		
2220	22	M-code pressure select 2	20 AWG TFFN	BLU		
2230	23	M-code pressure select 3	20 AWG TFFN	BLU		
2240	24	M-code pressure select 4	20 AWG TFFN	BLU		
PE	PE	Earth ground	16 AWG TFFN	GRN/YEL		

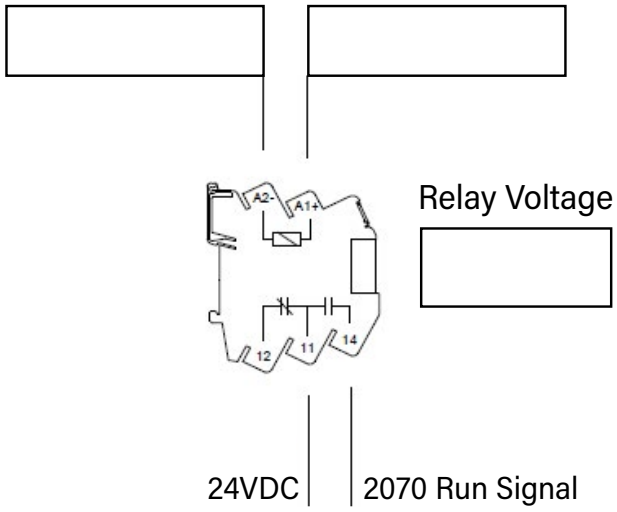
MACHINE CONNECTIONS

Fill in the fields with the machine terminals used for your run relay signals.

Run Signal Relay 1: All systems



Run Signal Relay 2: 8x2 only



Installation Date: _____

Installation Notes: _____

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