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USER GUIDE

UGC036-0512

HPD Pump

Models HPD 5, 7.5, 10, 15, and 25

Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:

Manual Number: UGC036-0512

Serial Number(s):

Model Number(s):

DISCLAIMER: The Conair Group, Inc., shall not be liable for errors contained in this User Guide or for incidental, consequential damages in connection with the furnishing, performance or use of this information. Conair makes no warranty of any kind with regard to this information, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

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Introduction

Purpose of the User Guide

This User Guide describes the Conair HPD Pump and explains step-by-step how to install, operate, maintain and repair this equipment.

Before installing this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You also should review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

How the Guide is Organized

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.

⚠ Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.

1 Numbers indicate tasks or steps to be performed by the user.

◆ A diamond indicates the equipment's response to an action performed by the user.

❒ An open box marks items in a checklist.

● A circle marks items in a list.

Indicates a tip. A tip is used to provide you with a suggestion that will help you with the maintenance and the operation of this equipment.

✎ Indicates a note. A note is used to provide additional information about the steps you are following throughout the manual.

Using the HPD Pumps

Each HPD Pump is designed to work within a central vacuum system consisting of:

- Vacuum Receiver(s)
- Central Loading Control(s)
- Dust Collector

Separate instructions are provided for these devices and should be referred to as needed to fully understand the operation of the entire system.

Your Responsibility as a User

You must be familiar with all safety procedures concerning installation, operation and maintenance of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

ATTENTION:
Read this so no one gets hurt

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.

WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should be installed, adjusted, and serviced by qualified technicians who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

WARNING: Voltage hazard

This equipment is powered by three phase power, as specified on the machine serial tag and data plate. See separate loading control manual for control voltage requirements.

A properly sized conductive ground wire from the incoming control wiring must be connected to the ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power and control sources before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.

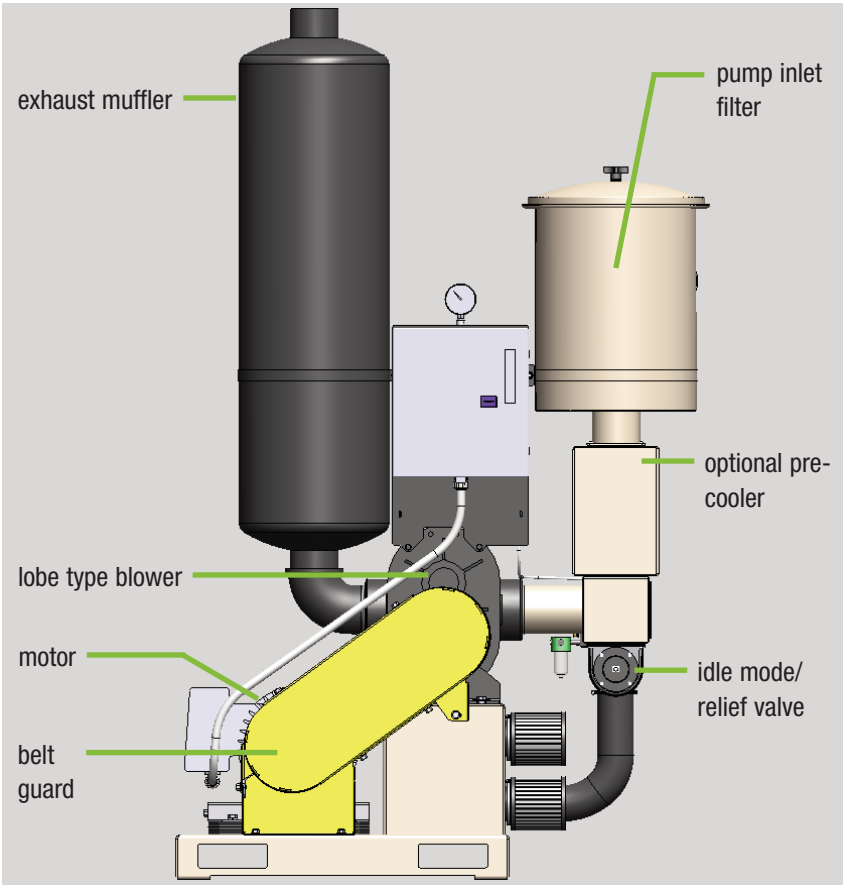
SECTION
2

Description

What is the HPD Pump?

Conair HPD Pumps are designed for long distance, high-volume material conveying applications.

Each model has a powerful, rotating lobe-type blower, protected by a vacuum relief valve (factory-set to 12 in. Hg) and belt driven by a three-phase motor with magnetic starter and overload protection. An integrated pump protection filter is included and all components are mounted on a rugged frame, housing an integrated exhaust muffler.

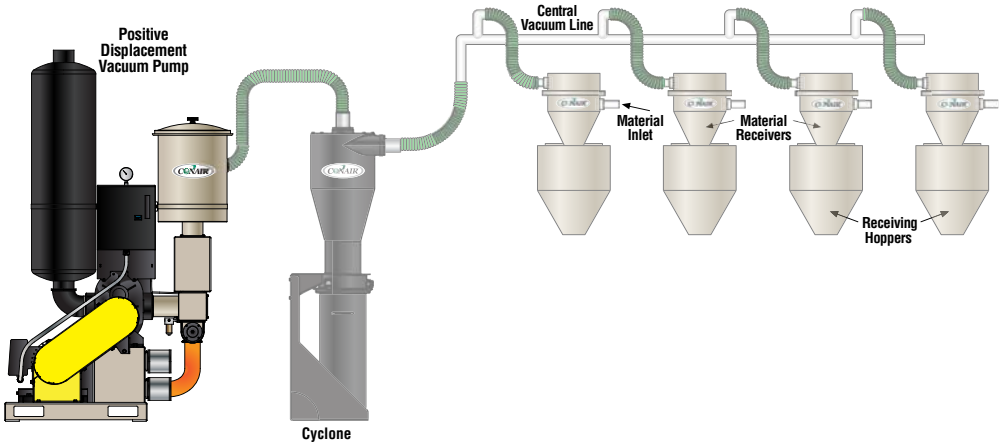


Typical Accessories and Options

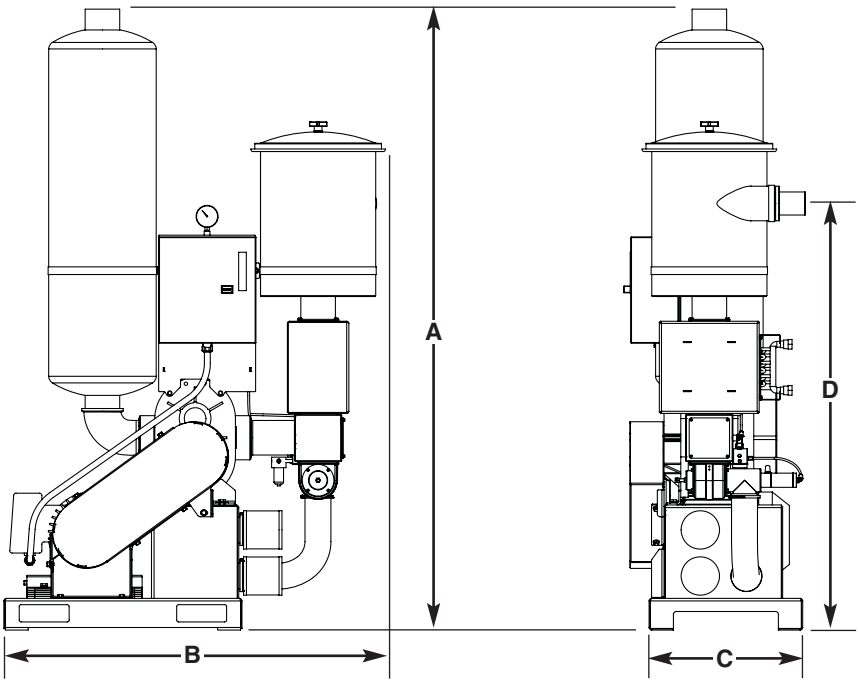
Vacuum pumps traditionally work directly with dust collectors, cyclones or other filters that are designed to remove plastic dust from the incoming air line to prevent contaminants from circulating through the vacuum pump. In some cases, operation of the pump without a dust collection system can create pump damage or a hazardous condition resulting from flammable or low melt-point plastic material being exposed to the elevated operating temperatures of the pump.

Each HPD model includes a combination vacuum relief/idle mode valve. The valve allows the vacuum pump to remain operating for a period of time after the run signal from the loading control is interrupted. This can greatly lengthen pump life by eliminating rapid start/stop cycles common to many vacuum loading systems. Instead of shutting down, the pump continues to run for a minimum of five minutes while vacuum pressure is relieved through a compressed air-operated valve that bleeds ambient air into the vacuum inlet line of the pump. A clean compressed air source must be provided to the valve solenoid for it to operate.

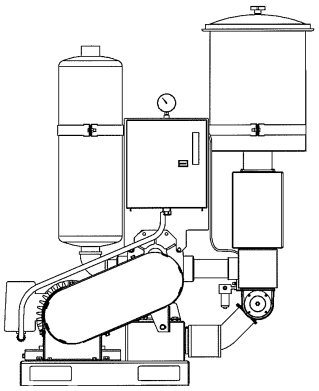
An optional air cooler option may be easily integrated into the assembly to reduce the temperature of conveying air entering the pump for conveying applications that move heated materials.



Specifications



Note that on HPD5 and HPD7.5 models, the pump inlet filter is the tallest point on the unit. On the larger models, the exhaust muffler is the tallest point on the unit. The drawing below represents the HPD7.5 model.



MODEL	HPD5	HPD7.5	HPD10	HPD15	HPD25
Motor type*	TEFC	TEFC	TEFC	TEFC	TEFC
Performance characteristics					
Horsepower	5	7.5	10	15	25
Standard CFM at material pickup point @ 10" Hg	76.6	121.2	154.5	201.1	346.2
Average sound level (dbA) @ 8", 10" and 12" Hg	81.0	82.5	83.6	82.8	86.1
Pump inlet filter area	53 ft² {5.0 m²}				
Dimensions inches {mm}					
Standard inlet size (OD)	1.75 {44}	2.25 {57}	2.5 {64}	3.0 {76}	4.0 {102}
Exhaust line size (NPT)	2.50	2.50	4.00	4.00	4.00
A - Height	53.5 {1359}	53.5 {1359}	81 {2057}	81 {2057}	82 {2083}
B - Width	46 {1168}	48 {1219}	50 {1270}	50 {1270}	55 {1397}
C - Depth	22 {559}	22 {559}	23.5 {597}	26 {660}	29 {737}
D - Vacuum inlet height	37 {940}	37 {940}	43.5 {1105}	43.5 {1105}	44.5 {1130}
A - Height w/precooler†	60 {1524}	60 {1524}	81 {2057}	81 {2057}	82 {2083}
B - Width w/precooler†	46 {1168}	48 {1219}	50 {1270}	50 {1270}	55 {1397}
C - Depth w/precooler†	22 {559}	22 {559}	23.5 {597}	26 {660}	29 {737}
D - Vacuum inlet height w/precooler†	49 {1245}	49 {1245}	56 {1422}	56 {1422}	57 {1448}
Weight lb {kg}					
Shipping weight	510 {231}	600 {272}	840 {381}	950 {431}	1200 {544}
Voltage Full load amps					
240V/3 phase/60 hz	12	18.8	28	39	59
480V/3 phase/60 hz	6	9.4	14	19.5	29.5
575V/3 phase/50 hz	4.8	7.5	10.7	16	27
Optional precooler requirements†					
Water temperature‡	45°- 85°F {7°- 29°C}				
Water flow	3 gal/min {11.4 l/min}				
Connections (NPT)	3/4 inch				

SPECIFICATION NOTES:

* Energy-saving, high-efficiency motors are also available.

† Precooler is an option.

‡ Water temperatures above or below the recommended levels may affect pump performance. Tower, chiller, or municipal water sources can be used.

These tables define standard configurations only. Specifications can change without notice. Contact a Conair representative for the most current information.

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SECTION
3

Installation

Unpacking the Boxes

WARNING: You are responsible for the structural integrity of this installation.

HPD Pumps are typically shipped bolted to a pallet and either enclosed by a box or simply wrapped in protective plastic sheeting.

1. **Carefully remove the box or wrap and unbolt the unit from the shipping pallet.** When unpacking, make sure that all packing material is completely removed from the pump, paying special attention to the inlet and outlet tubes and crevice areas, to prevent potential damage caused by the packing materials during the heat and suction of the pump's operation.

2. **Once the pump is unbolted from the pallet, carefully move the pump using a fork truck, crane or other lifting device.** Use caution as the pump is transferred off the pallet and into the desired location for installation.

Preparing for Installation

The pump should be located in a protected, indoor location. Three phase power will be required and a fused disconnect switch (not included) is required near the pump. For use of the idle mode valve, compressed air will also be required near the pump. Tubing connections to the pump are typically made with a flex hose to allow easy connections.

Securing the pump to the floor with bolts is not strictly required, but is recommended to prevent the minimal motion that could occur as the pump ages or in the event of malfunction caused by contamination of the air stream.

The pump will only require minimal maintenance, but should still be located where it is accessible and where its vacuum gauge is easily read by set-up and operation personnel.

Installing the pump

1 **Use a fork truck to carefully move the pump into its operating location.**

2 **Use care in orienting the pump for easy access** to its pump starter and clearance for the opening of its lid and allowing easy visibility of its vacuum gauge.

3 **Note the inlet and outlet of the pump.** Generally, the outlet will simply exhaust conveying air out of the muffler, but it may also be plumbed outside if desired, as long as the exhaust line expands the size of the tube as it follows its path to exhaust. The inlet stub will be connected to the dust collector or cyclone of the system.

4 **The use of flex hose for pump connections is recommended,** to allow easy movement or service, if needed. Line up and coordinate all connections to allow for easy connections, but wait until pump rotation has been established (and corrected, if need be) before completing installation.

5 **Connect the dust collector or cyclone vacuum outlet to the pump inlet.**

6 **Tighten all coupling bolts evenly**. Tubing must not put a strain on the inlet or outlet of the pump connections or eventual leaks will occur.

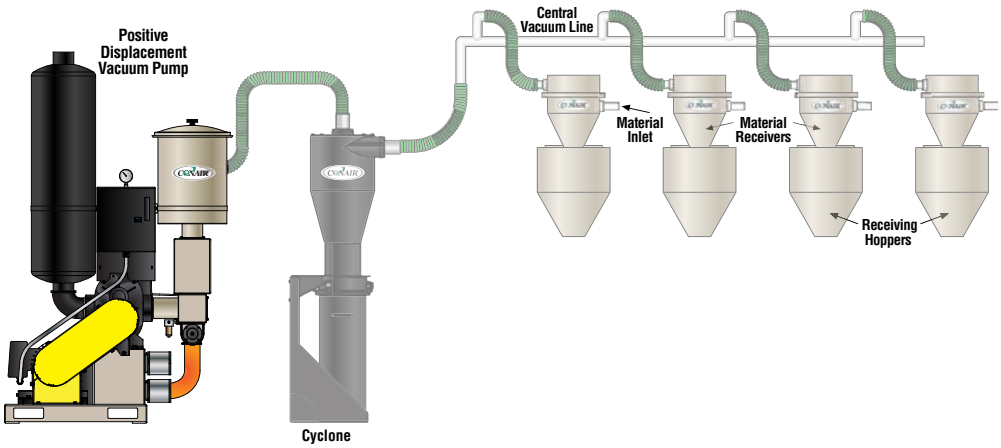
7 **Maintain an air space all around the pump for ventilation.** Do not block or cover any portion of the cooling fins that would prevent free air movement or reduce cooling effectiveness.

8 **Connect power.** Refer to the accompanying wiring diagram for connection of the main power supply and the conveying control circuit. **IMPORTANT: You must provide a wall-mounted disconnect for three-phase electrical connection. Incoming voltage and current must match the electrical specifications on the pump data plate and serial tag.**

WARNING: This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation and potential hazards of this type of machine. All wiring, disconnects and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the the machine serial tag and data plate.

INSTALLATION AND OPERATION NOTE: *The pump inlet is equipped with a vacuum relief valve to prevent the vacuum from exceeding 12 in. Hg. Excessive vacuum will reduce the life of the pump and can destroy it.*

For special applications requiring a higher vacuum level or installation above 1500 ft elevation, consult Conair service.



Checking Rotation

WARNING: This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation and potential hazards of this type of machine. All wiring, disconnects and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the the machine serial tag and data plate.

CAUTION: Never place your hand directly over the inlet or the exhaust.

Upon initial start-up, but before normal operation, the HPD Pump must be checked for proper rotation.

1. **Set the loading controls to a minimal operating cycle** (very low load time setting of a single receiver, see separate loading control manual) and check the pump with no vacuum or exhaust tubing or flex hose installed.

2. **Double-check air flow to confirm actual flow direction**. If air is exiting from the filter inlet, see step 3. If direction is OK, proceed.

3. **If direction is backwards,** disconnect power and change any two of the three phase leads coming into the pump starter. Upon confirming proper rotation, reconnect power and complete the tubing installation for operation.

The HPD Pumps operate in response to signals provided from a loading control, located elsewhere, and wired to the pump starter or the Transformer/Idle Mode Control. Once properly installed, the pump should respond to signals from the loading system and run according to the Idle Mode timer (if used) and the loading control. Operation (on-time, etc) is determined solely by the loading and Idle Mode Control Systems. The only change to operation that can occur within the pump assembly itself is a motor overload within the pump starter or a malfunction. If this occurs, *see Troubleshooting section.*

SECTION

4

Maintenance

Preventative Maintenance Schedule

To maintain the best performance, you should follow the maintenance recommendations outlined here and in any included manuals from component manufacturers.

● Weekly, or as often as needed

❒ **Check and clean the pump inlet filter.**
An inlet filter has been provided to protect the pump from solid material that can enter and damage the pump impellers. Material can enter the vacuum line if a receiver filter is improperly installed or if if has a hole in it. Replace the pump inlet filter if it is torn or worn.

❒ **Check all V/belts.**
The V/belts have a tendency to stretch, so an adjustable motor base is provided. Keep belts tight to prevent slippage and wear. Do not use belt dressings.

● Every 500 hours of operation

❒ **Grease the pump.**
Use No. 2 bearing grease or the equivalent. Refer to manuals from the component manufacturer for additional information and instructions.

● Every 1500 hours of operation

❒ **Change the oil.**
The vacuum pump has been filled with the proper oil and tested by Conair before shipment. Even so, this oil should be changed periodically. Use synthectic viscosity 220 or 320 or an equivalent oil.

● Every three months

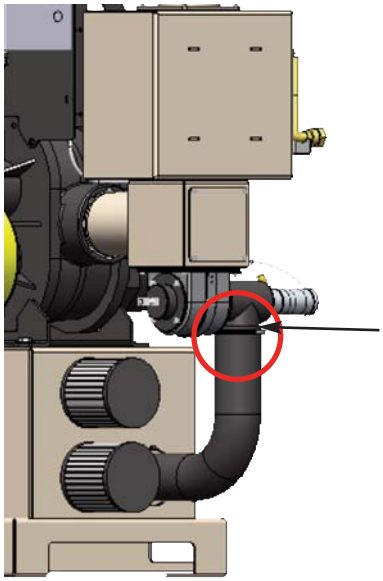
❒ **Check motor bearings and grease, if necessary.**
The motor is equipped with double-shielded ball bearings having sufficient grease to last indefinitely under normal service. But if the motor is used constantly in dirty, wet or corrosive atmospheres, you should add 1/4 oz. of grease per bearing every three months. Use a quality, rust-inhibiting, polyure-based grease such as a NLGI #2 premium grade microgel grease with 250°F {121°C}service temperature and moisture resistance and good mechanical stability. Shell Darina EP NLGI Grade 2 is an example of this. Refer to the motor manual for additional instructions.

● Every six months

❒ **Check the idle mode/relief valve for proper operation.**
The idle mode/relief valve is designed to protect the pump from damage if the conveying line becomes clogged or obstructed.

Inspect the idle mode/relief valve

The idle mode/relief valve is designed to protect the pump from damage if the conveying line becomes clogged or obstructed. To check the valve:



1 **Partially obstruct the inlet by using a rigid flat plate and slide it across the opening until 12 inches Hg registers on the gauge.** Do NOT completely block the inlet. The relief valve should open at approximately 12 inches Hg. Do not exceed 15 inches Hg. If the valve does not release at or below 15 inches Hg, replace or adjust the valve.

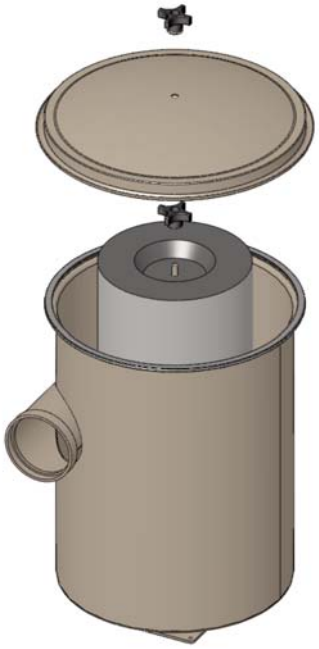
CAUTION: Hot surfaces. Always protect yourself from hot surfaces inside and outside the pump.

Note: Gauges should be checked/calibrated every 12 months.

Cleaning the Pump Inlet Filter

WARNING: High voltage. Always stop the pump, disconnect and lock out the main power source before troubleshooting or performing repairs.

Clogged filters reduce air flow and pump efficiency. Cleaning frequency depends on how much material you process and how dusty or full of fines it is.



1 **Remove the hand knob and pull the filter lid off.**

2 **Remove the filter hand knob, then remove the filter**.

3 **Clean the filter by laying it on its side and gently tapping it on the floor.** Replace damaged, worn, or clogged filters.

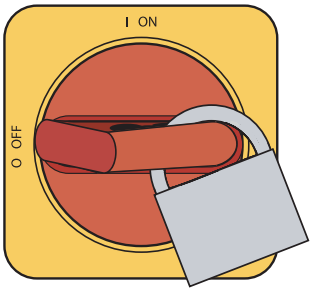
4 **Remove any dust which may have accumulated in the pump inlet filter housing.**

5 **Reverse the procedure to reinstall the dust collector filter.** Ensure that the lid gasket is in place and in good condition.

CAUTION: Hot surfaces. Always protect yourself from hot surfaces inside and outside the pump.

CAUTION: Wear eye protection. If you use compressed air to clean equipment, you must wear eye protection and observe all OSHA and other safety regulations pertaining to the use of compressed air.

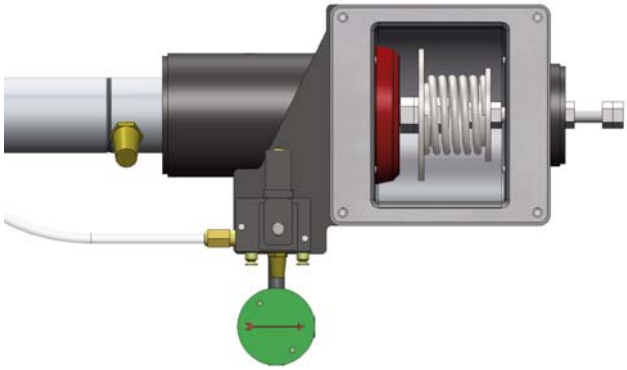
Cleaning the Idle Mode/Relief valve



1 **Stop the vacuum pump, disconnect and lockout the main power to the pump.**

WARNING: High voltage. Always stop the pump, disconnect and lock out the main power source before troubleshooting or performing repairs.

2 **Thoroughly inspect the idle mode/relief valve.** Check inside and out for any signs of contamination, residue or other foreign substances that may potentially block the motion of the internal, spring loaded valve plate.



3 **Clean the inner components of the valve.** Use a cleaning agent that will dissolve any plasticizer or oily build-up on the surfaces of the idle mode/relief valve. Be sure to clean between the valve plate and the valve seal. Spray the cleaning agent into the valve opening and then flush out. The valve may require disassembly to reach critical areas.

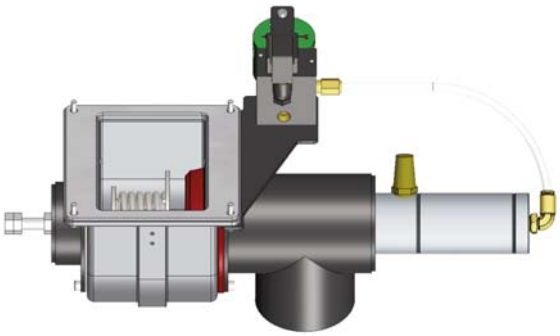
CAUTION: Wear eye protection. If you use compressed air to clean the equipment, **you must wear eye protection** and observe all OSHA and other safety regulations pertaining to the use of compressed air.

IMPORTANT: If a valve can not be cleaned adequately it should be replaced to prevent malfunction or a potentially hazardous condition due to inadequate vacuum relief.

4 **Reassemble the valve and re-adjust to the proper vacuum setting** (see instructions for adjusting the idle mode/relief valve.)

Readjusting the idle mode/relief valve

1 **Prior to checking the idle mode/relief valve operation, confirm the operation of the vacuum gauge on the pump.** With the pump off, the gauge should read "0" inches of mercury (Hg). The gauge should rise to a range between 5 and 15 inches of Hg as the pump runs. If it does not operate accordingly, replace the gauge. Vacuum gauges are not repairable.



2 **Access the vacuum adjustment screw.** Using a 9/16 inch wrench, loosen the jam nut on the back of the idle mode/relief valve to allow the adjustment screw to move.

3 **Start the vacuum pump.**

4 **Open the valve.** Position a rigid flat plate partially over the pump's air inlet with the pump running until the relief valve opens as indicated by an inrush of air into the valve. Note the reading on the vacuum gauge. The exact point at which the valve opens to allow air to be sucked into the pump should be 12 inches Hg.

5 **Establish the proper vacuum relief point.** With a 9/16 inch wrench, turn the adjustment screw to establish the proper vacuum relief point while restricting the opening at the vacuum inlet of the pump. Repeat the procedure until you feel air entering the idle mode/relief valve and vacuum reading is 12 inch Hg on the vacuum gauge. (Maximum vacuum limit is 15 inch Hg.)

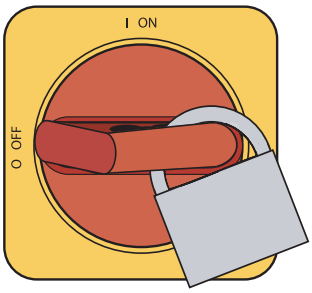
6 **Tighten the jam nut to lock the adjustment bolt and reconnect the hose to the valve inlet.** Check that the gauge still reads 12 inch Hg.

✎ **Note:** Turn the screw clockwise to increase the relief point, and counter-clockwise to decrease the relief point.

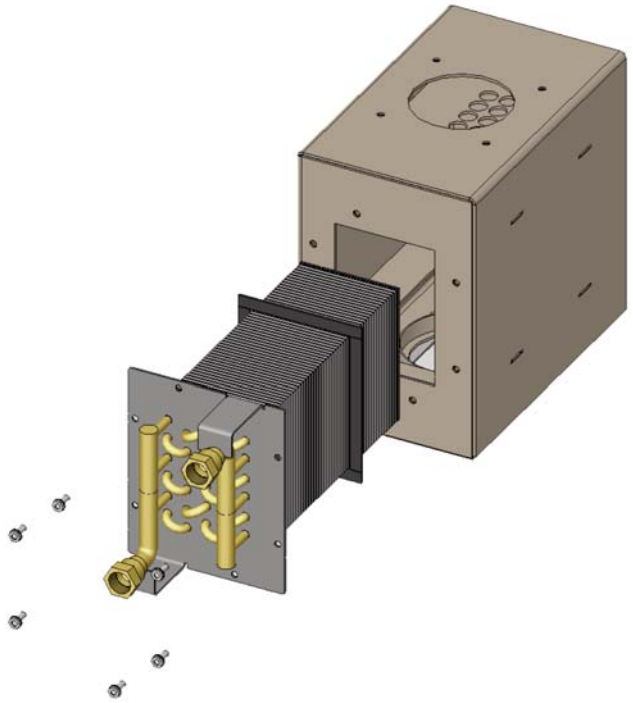
Cleaning the Precooler Coils

CAUTION: Hot surfaces. Always protect yourself from hot surfaces inside and outside the pump.

You will need to clean the precooler coils to keep them working efficiently. Cleaning frequency depends on the type and amount of material you convey.



1. **Stop the pump and lockout the main power.**
2. **Turn off the water flow to the water supply line.** Disconnect supply and return lines.
3. **Remove the bolts securing the precooler.**
4. **Remove the precooler by pulling it out of the precooler housing**.
5. **Clean the assembly using a mild soap and water.** Let the assembly dry thoroughly before installation.



NOTE: In cases of heavy volatiles, steam cleaning or the use of solvents, such as acetone, may be necessary. Be sure to test a small area with the solvent you have selected to be sure there is no adverse reaction.

6. **Inspect the condition of the gasket.** If it is damaged, replace the gasket.
7. **Reassemble** by repeating the steps in reverse order.
8. **Connect the water supply line to the inlet.** If a manual shut off valve is used, it should be mounted on the inlet line as well.

SECTION

5

Troubleshooting

Before You Begin Troubleshooting

You can avoid most problems by following the recommended installation and maintenance procedures outlined in this User Guide. If you do have a problem, this section will help you determine what caused it and how to fix it.

- ❑ **Find the wiring diagrams that were shipped with your equipment.** These diagrams are the best reference for correcting a problem. The diagrams also will note any custom features, such as special wiring or control options, not covered in this User Guide.

- ❑ **Verify that you have manuals for other equipment in the process line.** Solving problems may require troubleshooting malfunctions or incorrect operating procedures on other pieces of equipment.

A Few Words of Caution

WARNING: This machines should be adjusted and serviced only by a qualified technician who is familiar with construction and operation of this type of equipment.

WARNING: Voltage hazard.
Troubleshooting the electrical system of this equipment requires use of precision electronic measuring equipment, and may require access to the electrical enclosure while power is on. Exposure to potentially harmful voltage levels may be unavoidable. These troubleshooting procedures should be performed only by qualified electrical technicians who know how to use this precision electronic equipment and understand the hazards involved.

WARNING: Disconnect power and compressed air before servicing.
Always disconnect and lock out power and compressed air supplies to this equipment before performing maintenance or repair. Failure to do so could result in personal injury caused by the unexpected energization of this equipment.

Troubleshooting

⚠ **WARNING:** Disconnect power and air sources. Always disconnect the pump from the loading control, main power source, and compressed air source before servicing. This prevents the pump from starting during servicing, which could cause personal injury from flying debris or moving parts.

Problem	Possible cause	Solution
Motor does not start; no motor noise.	At least two power supply leads interrupted.	Eliminate interruption by fuses, terminals or power supply cables.
Motor does not start; humming noise.	One power supply lead interrupted.	Eliminate interruption by fuses, terminals or power supply cables.
Protective motor switch trips when motor is switched on. Power consumption too high.	Winding short-circuit.	Have winding checked.
	Motor overloaded.	Clean filters, mufflers and connection pipes if necessary. Eliminate interruption by fuses, terminals or power supply cables.
Pump-motor unit does not generate any or generates insufficient vacuum.	Leak in the system.	Seal leak in the system.
	Wrong direction of rotation.	Reverse direction of rotation by interchanging any two connecting leads.

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee. Most manuals can be downloading free of charge from the product section of the Conair website. www.conairgroup.com

We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

How to Contact Customer Service

To contact Customer Service personnel, call:

✎ **NOTE:** Normal operating hours are 8:00 am - 5:00 pm. After hours emergency service is available at the same phone number.

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department.

Before You Call...

If you do have a problem, please complete the following checklist before calling Conair:

- ❒ Make sure you have all model, control type and serial numbers from the serial tag, and parts list numbers for your particular equipment. Service personnel will need this information to assist you..
- ❒ Make sure power is supplied to the equipment.
- ❒ Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- ❒ Check the troubleshooting guide of this manual for a solution.
- ❒ Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- ❒ Check that the equipment has been operated as described in this manual.
- ❒ Check accompanying schematic drawings for information on special considerations.

Equipment Guarantee

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

Performance Warranty

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

Warranty Limitations

Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.