

Model FAC-300

A/C Component Flusher

OPERATING INSTRUCTIONS

HECAT, INC.



THE ORIGINAL



**PULSATING
FLUSHER**

Hecat, Inc. 2910 Ridge Court Cumming, GA 30041 (800)380-9501

www.hecatinc.com

HECAT, INC.

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A/C COMPONENT FLUSHER - SAFETY WARNINGS

- **Please read and understand entire manual and all the instructions before beginning use of the flusher.**
- **A compressed air filter must be used in line before the flusher. Moisture should not be introduced into the flusher or the A/C component. Drain filter before each use. The use of non-filtered air will void warranty.**
- **Wear protective equipment, including safety goggles and gloves, when working with refrigerants and solvents. Refrigerants and solvents can cause injuries.**
- **Equipment must be operated by qualified, certified A/C service professionals. Operator must be familiar with air conditioning and refrigeration systems, solvents, and the dangers of working with pressurized systems and components.**
- **Operator is responsible for complying with any and all applicable laws and regulations governing the use of this equipment, as well as the disposal of used solvents, waste oils, the equipment, and any of its components.**
- **Call Manufacturer's Tech Line (1-800-380-9501) before attempting any repair. Repairs are to be performed by trained and approved service technicians ONLY.**
- **This equipment should only be used in locations with mechanical ventilation.**
- **Avoid Breathing A/C refrigerant, lubricant, and flush vapor or mist. Exposure may irritate eyes, nose, and throat. To remove HFC-134a from the A/C system, use service equipment certified to meet the requirements of SAE J2210 (HFC-134a recycling equipment). Additional health and safety information may be obtained from the refrigerant, lubricant, and flush manufacturers.**
- **Caution – Do not pressure test or leak test HFC-134a service equipment and or vehicle air conditioning systems with compressed air. Some mixtures of air and HFC-134a have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information can be obtained from refrigerant manufacturers.**



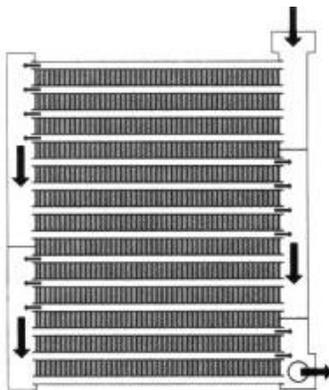
RECOMMENDED FLUSHING PROCEDURES

CONDENSERS

Complete or partially assembled systems cannot be flushed. You cannot flush through service ports. You must always isolate the heat exchanger and flush through the hoses or the most direct and unrestricted path to obtain the most satisfactory flushing results. Do not attempt to flush through compressors, orifice tubes, accumulators, or filter/dryers; these items must be replaced or serviced by other means.

For years, flushing Condensers has been very successful and there have been no major issues with flushing the simple pathways of the "Tube & Fin" or "Serpentine" designed Condensers. The most common Condenser flushing problems are associated with the "Parallel Flow" Condensers (PFC) and the phenomenon of "Black Death" or "Compressor Burnout".

The following information is provided as a basic guide to flushing a condenser and cannot cover all the possible scenarios a technician may encounter.



◀ The arrows in this picture to the left are indicating the normal refrigerant flow path. In some PFC designs, a serviceable filter/dryer will be found as an integrated component. The filter/dryer desiccant bag and screen must be removed and the housing resealed before attempting to flush.

Condensers will have the inlet usually located at or near the top, and the outlet will usually be located at or near the bottom of the unit. As with most heat exchanger flushing, this unit should be back flushed first (bottom to top), in the opposite direction of normal refrigerant flow. This is done to back out possible debris that cannot be driven through the small passageways. Back flushing (bottom to top) "in car" may leave some solvent residue that may be removed following the "How to test a Component" section of this manual. A second flush in the opposite direction (top to bottom) can be done to be sure all the solvent is recovered. All HECAT flusher models are most efficient when recovering from the lowest point, which leaves a clean and dry component.

In cases of extreme high debris loads such as a catastrophic compressor failure, it may be necessary to even remove the PFC from its mountings and position the component to allow for gravity to assist in removing the larger metal pieces during the flushing process. A good understanding of the internal flow paths and design of the component being flushed is necessary to select the correct position. Contact the manufacturer's tech line if necessary. Back flushing in the correct position, will provide for good debris removal and solvent recovery and usually can be accomplished with one flush.

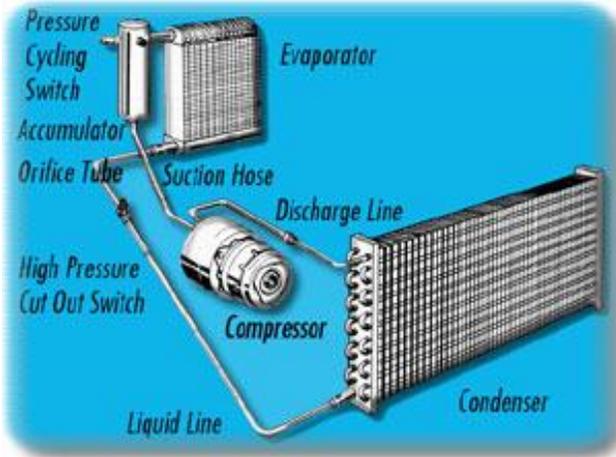
If flushing is for oil removal only and backing out debris is of no concern, then it would be acceptable to perform one flush in the normal refrigerant flow direction (top to bottom).

You can flush back and forth as much as you wish. Always make the last flush in the normal flow direction (top to bottom) to allow for the complete removal of the flushing solvent during the final purging and or vacuum process.

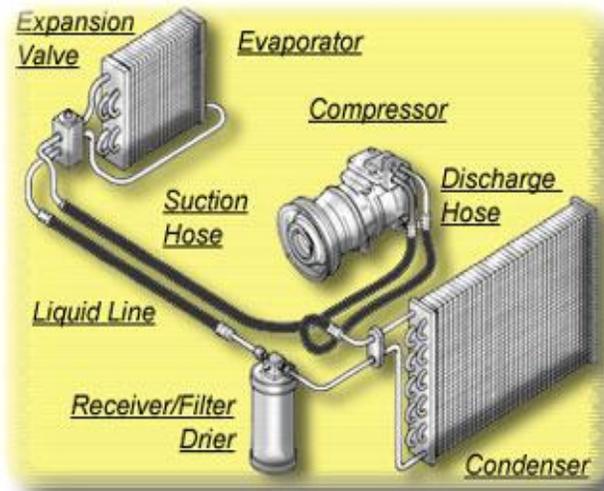
EVAPORATORS

Complete or partially assembled systems cannot be flushed. You cannot flush through service ports. You must always isolate the heat exchanger and flush through the hoses or the most direct and unrestricted path to obtain the most satisfactory flushing results. Do not attempt to flush through compressors, orifice tubes, accumulators, or filter/dryers; these items must be replaced or serviced by other means.

Successful flushing of A/C evaporators has proven to save technicians the time and frustration related to the difficulty of in dash replacement, eliminates the guessing about how much waste oils are remaining and the concern of unknown debris, and reduces the overall repair cost, which will turn quotes into jobs. The following information is provided as a basic guide and does not cover all possible scenarios.



Common Orifice Tube (OT) systems will usually have an Accumulator located between the Evaporator and Compressor and the debris load is limited to what can pass through the OT and its screen. The Evaporators inlet is the lower or smaller of the two ports. Usually only one flush in the back flush (opposite direction of refrigerant flow) by flushing in through the larger or upper port is required.



Common Thermal Expansion Valve (TXV) systems will usually have a filter/dryer located between the Condenser and the TXV and the debris is usually very limited from entering the Evaporator through the filter and TXV. However, in the case of a catastrophic Compressor failure, with nothing between the Evaporator outlet and the Compressor inlet, large debris does back up into the Evaporator when the system pressures equalize. This large debris cannot be flush through the component and must be backed out the direction it came in. The TXV should be removed and the component should be flushed through the smaller of the two ports (normal refrigerant flow direction).

REAR AIR

For vehicles with rear air, the recommended procedure is to access the rear Evaporator and bypass the expansion device and flush the rear Evaporator. While disconnected from the front and rear, the long hoses can be connected together at one end and flushed like another component.

THROUGH A TXV

TXV's on the passenger side of the fire wall and in rear air situations, make flushing through a TXV desirable. As with regulated refrigerant flushes of the past (R-11, R-113), the HECAT H1000 is the only HECAT model that has shown success due to the use of a highly evaporative "refrigerant" solvent (Genesolv SF) and a vacuum recovery process. Always blow through the TXV first to confirm there is no debris blocking the TXV. For all other HECAT models and any other flushing method, removal of the TXV is required.

FAC-300 A/C COMPONENT FLUSHER OPERATING INSTRUCTIONS

Filling

- Make sure the DRAIN valve on the back of unit and the two valves (AIR & FLUSH) on the main control valve are in the OFF position.
- Remove filler cap and install 2 gallons of an approved flush. Fluid level will be visible in the sight tube on the back of the flush tank. Do Not Overfill. Exclusive use of Hecat Safe-Flush will provide for a **Lifetime Warranty.**

Connecting

- Using A/C system adapters (Hecat FAD-100 included), connect the flusher hoses to the A/C system as outlined in the A/C Component Flushing Procedure.
- With all the valves in the OFF position, connect shop air supply to the back panel. The Flushers internal regulator is set at 60 PSI and should not need to be adjusted.
- After the flusher is connected to the A/C component, a quick couple has been provided so you can remove the return line (line w/ T-Strainer) from the back of the flusher and purge the majority of waste oils if you wish. Remove this line from the back panel and while holding this line firmly into a waste container; turn both the AIR and FLUSH valves ON for a few seconds (or as long as you need) and then turn both valves OFF. This step will use/waste some flush to help increase the usable filtered life of the remainder. Reconnect the line when done.

Flushing Component

- Turn the AIR & FLUSH valves to the ON position and allow the unit to flush using all of the flush. Fluid level will drop to the bottom of sight tube, the exhausting air will increase, and pulsing will stop; when all the flush has been used.
- Turn AIR valve OFF, this completes the flushing operation. Fluid needs to be drained/recycled at this time if more flushing is required. If more flushing is not required, you can skip the next step now, but will need to return to it after the air purging process is done.

Draining Flusher

- To drain the recovery tank you will need the original or suitable clean containers to hold the 2 gallons of filtered and re-usable flush. Hoses should remain connected to the component or connected to the storage fittings located at the top of the back panel. Turn on the AIR valve. Put the drain hose into your container and slowly open the DRAIN valve. CAUTION: This fluid is being pushed out by air. You may experience a sudden gush of air when all fluid is expelled. Turn the air valve OFF when complete. If not overused and heavily contaminated, fluid can now be loaded back in for use again or it can be disposed of with waste oils. Please, always dispose of contaminated fluids in the proper manner. Hecat does recommend using all the fluid, draining (filtering), and refilling for next use to prevent accidental overfilling (filling a flush tank, with a recovery tank already full, is guaranteed to produce a big mess).

Purging / Drying Component

- With the FLUSH valve OFF, turn the AIR valve ON and allow the system to air purge for 20 to 30 minutes minimum. Some flush manufacturers may recommend a longer period of purging, depending on how readily their fluid will vaporize. For best results, always follow the flush manufacturer's instructions. Air purging can be done for any extended length of time necessary to satisfy the technician.

Notes

- Flushing must be followed by a thorough job of evacuating with a strong vacuum pump to assure removal of any trace flush residues and or moisture.
- Always clean out the return line T-Strainer after every flush.
- The spin-on filter is not in the flush circuit, it is in the drain circuit only.
- Technicians should use good judgment as to how frequently to install a new particle filter and new flush. Filtering removes the contaminant particles but does not remove the waste oils. Accumulation of waste oils in the flush will decrease its cleaning effectiveness. Flushing of several extremely dirty A/C systems in succession will obviously contaminate the flush much more rapidly and decrease the number of systems that can be flushed before changing the fluid becomes necessary.

HOW TO TEST A COMPONENT TO BE CLEAN

Because so many variables exist that can affect the flushing results such as component size, component design, type of failure, and debris load; it is recommended that the technician employ the following suggested method to confirm satisfaction in component cleanliness and complete solvent recovery. It is known as the air “Pop” and considered by some to be “Old School”, but we prefer to consider it what “Experienced” technicians do.

Using a high flow rubber tipped blow gun with nitrogen or very dry and filtered shop air, holding a clean lint cloth at the opposite port, blast the component hard with a generous volume. Because of the known effectiveness for the solvents to remove all the contaminant holding waste oils and sludge, any possible remaining debris particles are now loose and dry and will readily blow out. Blow it in both directions and if nothing or a few very small specs are found in the lint cloth, this confirms the component is clean. If a concerning amount of debris is blown out the technician at this point can blast more or repeat the flushing process to confirm their complete satisfaction in a clean and dry component.

Hecat Safe-Flush A/C

Automotive A/C Component Flush

Flushing A/C Evaporators and Condensers is a necessary step to complete a professional A/C system repair. Compressor manufacturers require flushing or their warranty is void. After extensive testing with many solvents and cleaners, we have developed Hecat Safe-Flush A/C, a synthetic hydrocarbon blend that includes a drying agent to aid in evaporation. Although it can be used with traditional flush guns and as a pour in flush, best results can be found when used with Hecat's Pulsating Flushing Equipment, which will safely and effectively remove the oil sludge and contaminants from the A/C component being cleaned. This product does not produce the potentially hazardous fumes associated with many other products available today.



- Available by the case (4-1gal.).
- UPS shippable (31 lbs).
- DOT classification - not regulated.
- Operator safe & friendly.
- Breaks down deposits.
- Environmentally friendly.
- No noxious fumes or odors.
- No need for special ventilation.
- Miscible (blends) with all A/C lubricants.
- Compatible with all system seals & hoses.
- Low boiling point ensures that residual is removed during air purge and complete final vacuum of the system.
- Ease disposed of with waste oils.
- **A LIFETIME WARRANTY** is available on any model of Hecat's Pulsating Flushing Equipment that uses Hecat Safe-Flush A/C exclusively.

Air Purging – Connecting to the highest port and using only filtered and dry shop air, it is recommended you air purge for approximately 20 minutes. When system has been reassembled it is also recommended to pull a deep vacuum for at least 1 hour to flush off any possible residual remaining from the air purge process.

Hecat's flusher warranty statement cautions that you cannot use any foaming, corrosive, ozone depleting, or other non-approved solvents in any Hecat Patented Pulsating Flusher. If you wish to use another A/C flush in your Hecat Pulsating Flusher, your one-year manufacturer's warranty will apply as long as it is an approved solvent. If there is any question about solvent approval contact Hecat's Tech Line at 800-380-9501 or see the list of other approved commercial A/C flushes at our web site, which is www.hecatinc.com

MSDS – HECAT SAFE-FLUSH

EMERGENCY PHONE NUMBER: 1-800-380-9501

Last Revised: August 2009

SECTION 1

Company Name:
Address:
Phone/Fax:
Trade name:
Chemical name:
Composition:
Application:
SECTION 2
General:

COMPANY IDENTIFICATION AND CHEMICAL
Hecat, Inc
2910 Ridge Court Cumming, GA 30041
770-205-5600 / 770-205-5633
Hecat Safe-Flush A/C & Hecat Safe-Flush Trans
Synthetic Hydrocarbon Cleaner
Hydrotreated light distillates – Cas# 64742-47-8 / P-Menta-1, 8-Diene – Cas# 5989-27-5
Flushing fluid used with or without Hecat flushing equipment to clean automotive heat exchangers.

SECTION 3

Appearance:
Known hazards:

COMPOSITION / INFORMATION ON INGREDIENTS
This product is non-hazardous. The product contains no known Carcinogens. No special warning labels are required Under OSHA 29 CFR 1910-1200.
HAZARDS IDENTIFICATION
A/C version - Clear liquid / Trans version - Red dye added.
Contains no known hazardous ingredients

SECTION 4

Eyes:
Skin:
Inhalation:
Ingestion:

FIRST AID MEASURES
Flush with clean lukewarm water. Seek physician's assessment if eyes are inflamed
Wash affected areas thoroughly with soap and water. Wash contaminated clothing.
Avoid breathing oil mists. Remove to fresh air. If breathing is difficult, get medical attention.
Do not induce vomiting. Force fluids. Has a laxative effect.

SECTION 5

Flash point:
Flammable limits:
Auto ignition temp:
Fire & explosion hazards:
Extinguishing media:
Fire fighting procedures:

FIRE FIGHTING MEASURES
165 - 170 F min.
N/A
N/A
Low fire hazard. Do not cut, drill, or weld empty containers
Dry chemical foam, water spray, and carbon dioxide for small fires.
Contain liquid, cover with extinguishing agent; use water to cool fire-exposed containers.

SECTION 6

Spill or leak:
Waste Disposal:

ACCIDENTAL RELEASE MEASURES
Contain spill, absorb with commercial absorbents, or by using pumps.
Dispose in approved containers through a licensed waste reclaimer.

SECTION 7

Storage temp:
Shelf life:

HANDLING AND STORAGE
<120 F recommended.
12 months in original closed HDPE container.
Not for internal use. Avoid prolonged contact with skin, eyes, and clothes.

SECTION 8

Precautions:
Eye protection:
Skin protection:
Respiratory protection:
Ventilation:
Exposure limits:

EXPOSURE CONTROL / PERSONAL PROTECTION
Chemical goggles if splashing is likely. Normally none required.
PVC or Nitrile gloves if in direct contact for more than 2 hours. Normally none required.
If mist is present, wear approved organic respirator. Normally none required.
General ventilation.
N/A

SECTION 9

Appearance:
Boiling point:
Vapor pressure:
Specific gravity:
Volatiles, % volume:
Odor:
Solubility in water:
Evaporation rate:

PHYSICAL AND CHEMICAL PROPERTIES
A/C version - Clear liquid / Trans version - Red dye added.
> 300 degree F
< .4 mm/hg
0.83 (water = 1)
100%
Very slight hydrocarbon odor.
Non soluble
< 1 (butyl acetate = 1)

SECTION 10

Stability:
Hazardous polymerization:
Incompatibilities:
Decomposition products:

REACTIVITY
Product is stable.
Will not occur.
Strong oxidizers and chlorine.
Analogous compounds evolve, carbon monoxide, carbon dioxide, and other undefined fragments when burned.

SECTION 11

General:

TOXICOLOGICAL INFORMATION
Acute LD. >5000mg/Kg (rat: oral) Practically non-toxic. Negative when tested by Ames test.

SECTION 12

General:

ECOLOGICAL INFORMATION
Biodegradable CEC L33T82 > 80% @ 45 days

SECTION 13

Waste disposal:

DISPOSAL CONSIDERATIONS
Used product must be disposed of in according to federal, state, and local environmental regulations.

SECTION 14

Technical name:
DOT hazard class
U.N./N.A.#:

TRANSPORTATION INFORMATION
Synthetic hydrocarbon cleaner
Not regulated.
Not regulated.

SECTION 15

Product label:
OSHA status:
TSCA status:
RCRA status:

Hecat Safe-Flush
REGULATORY INFORMATION
Non hazardous under 29 CFR 1900 1200
N/A
If discarded in its purchased form this product would not be a hazardous waste either by listing or characteristic. However, It is the users responsibility to determine if it is hazardous and the type of disposal. (40 CFR 261.20-24)

SECTION 16

General:

OTHER INFORMATION
This information is furnished without warranty, expressed or implied, except that it is the accurate to the best knowledge of Hecat, Inc. The data on this sheet related only to the specific material designed herein. Hecat, Inc assumes no legal responsibility for the use or reliance upon this data.

HECAT FAD-100

Universal A/C Flush Fitting Kit

PATENT PENDING

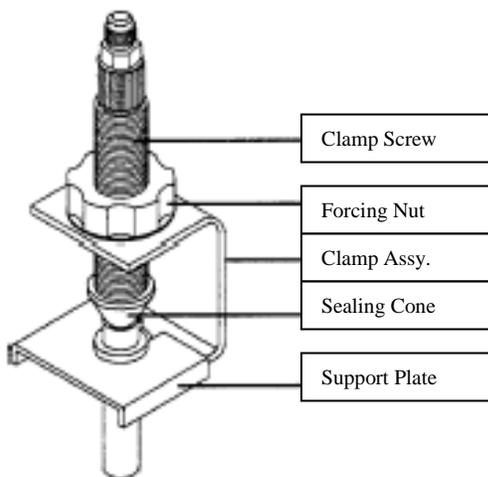
These instructions are intended as guidelines for general operation of the Universal Flush Fitting Kit. The clamp assemblies and support plates included in this kit can be installed on most A/C line or tube ends for attachment of the flusher being used. The support plates are slotted to allow for different size tubes or line nuts to be supported against the lower end of the sealing clamp. The chamfered area on the support plates will allow the flared end of the tubes to sit level. This way the sealing cone can be seated without slipping or damaging the end of the tube. Seating of the sealing cone into the fittings or tube ends does not require the use of wrenches or other tools.

Sealing cones damaged by tools must be replaced. The hard cones have proven to be very durable but rubber cones have been recently added to this kit to provide the most positive seal necessary to perform pressure and vacuum testing

Installation of the Sealing Cone:

1. After selecting the correct support plate to fit the tube or line fitting, tighten the clamp screw until the cone is seated tightly against the end of the tube or line fitting on the A/C component.
2. While holding the clamp screw by hand, rotate the forcing nut an additional 1/8 to 1/4 turn. This will provide a leak-tight seal for the flushing operation. To remove the clamp assembly, hold the clamp screw and back off the forcing nut to free up the sealing cone without damaging the end of the cone.
3. When using the adapters on a tube or fitting which is too small for the sealing cone to enter, replace the cone shaped seal with the concave seal.
4. To replace the sealing cone, hold the forcing nut and back out the clamp screw until the cone is pulled out the end of the clamp screw. Insert the desired sealing cone into the end of the clamp screw and tighten the screw until the cone bottoms in the screw, using the non-slotted support plate against the end of the cone.

IMPORTANT: DO NOT use pliers or other tools to twist the sealing cone out of the clamp screw, because it could damage the sealing cone.



Included in this Kit:

- (1) Storage Case
- (2) Clamp Assembly
- (2) Support Plate (1/2" OD tube)
- (2) Support Plate (5/8" OD tube)
- (2) Support Plate (3/4" OD tube)
- (2) Support Plate (7/8" OD tube)
- (2) Support Plate (No slot for pads & manifolds)
- (2) 3/8" Tube Seal (replacement part #300017)
- (2) Cone Shaped Seal (replacement part #300018)
- (2) Buna Rubber Cone Shaped Seal (#300018B)
- (2) Concave Seal (replacement part #300019)

The clamp screw terminates with a 1/4" male SAE flare to allow for universal use with the many flushing methods and equipment. The internal flow path is 0.250" minimum to allow for high flow flushing. When shipping with a Hecat flusher the FAD-100 kit will include the necessary female flare to male quick connect adapters required to connect to the Hecat flusher model selected.

If used properly, this tool will not damage A/C lines or connections. The technician is responsible to ensure of this tool's proper use and Hecat is not responsible for any damage done due to the misuse of this tool. Because of ongoing product improvements, we reserve the right to change design, specifications, and materials without notice. To order replacement parts or if you have any questions, call our Toll-free Technical Support Line: 1-800-380-9501

HECAT, INC.

WARRANTY STATEMENT

**This warranty covers all models of the patented HECAT Air Operated Pulsating Flushers.
(Models: MARK II, III, and IV. FAC-200, 300 and 400)**

If you have a problem with this flusher, please do not call the distributor you purchased this item from. They are instructed to direct you to our toll free number, which is 1-800-380-9501 or you, can contact us through our web site at www.hecatinc.com. Warranties are 100% the responsibility of, and handled directly by, the manufacturer. You must contact Hecat and obtain a return authorization number before returning any unit to the manufacturer.

HECAT, INC. offers to the user of the HECAT Flusher a one-year limited warranty. This warranty covers all manufacturing defects in materials and workmanship for one year from the date of purchase and is offered only to the original purchaser.

HECAT, INC. also offers a LIFETIME EXTENDED WARRANTY at no extra charge. By simply exclusively using the HECAT SAFE-FLUSH and keeping good proof of purchase records. The one year limited warranty will be extended to the original purchaser only, for the lifetime of the unit.

This warranty shall not apply to any flusher that has failed due to misuse, neglect, or accident.

This warranty shall not apply to any flusher showing evidence of using a non-approved flush. Non-approved flushes are Gasoline, Brake Fluid, Water, Acids, Corrosive liquids, foaming products, and known Ozone depleters.

This warranty shall not apply to any unit repaired by an unauthorized person or shows any evidence of failure to use an in line air filter to supply filtered dry air to operate any flusher.

If returning to the factory is necessary, HECAT, INC. will evaluate warranty claim and then, if approved, repair or replace at its option any unit returned. Units for warranty evaluation must be shipped freight pre-paid to the manufacturer's address above. Any flusher returned must be accompanied by a letter referencing the return authorization number, outlining the malfunction, proof of purchase with date purchased, proof of SAFE-FLUSH use if claiming extended warranty, and owner's name, address, and contact information.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the following statement may not apply in your state. Incidental or consequential damages occurring as a result of usage of this flusher are not covered by this manufacturer's warranty.

There are no other warranties implied or stated.