Model FAC-200

A/C Component Flusher

OPERATING INSTRUCTIONS

HECAT, INC.

THE ORIGINAL

PULSATING FLUSHER

Hecat, Inc. 2910 Ridge Court. Cumming, GA. 30041 Tel. (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. Evidence (rust) of 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 the refrigerant from the A/C system, use service equipment certified to meet the requirements of the current SAE standards. Additional health and safety information may be obtained from the refrigerant, lubricant, and flush manufacturers.**

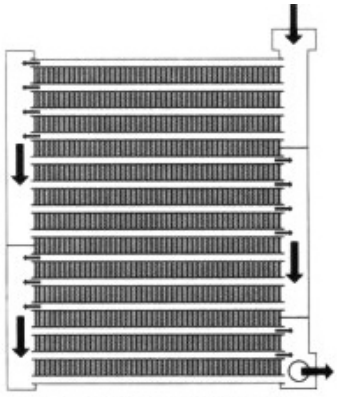
- **Caution – Do not pressure test or leak test refrigerant service equipment and or vehicle air conditioning systems with compressed air. Some mixtures of air and refrigerant have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information can be obtained from refrigerant manufacturers.**

TIPS FOR A/C COMPONENT FLUSHING

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). 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) followed by the air purge "in car" may leave some solvent residue. It is recommended to swap the lines to perform (a second flush if necessary) the air purge in the opposite direction (top to bottom) to be sure all the solvent is removed, 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.

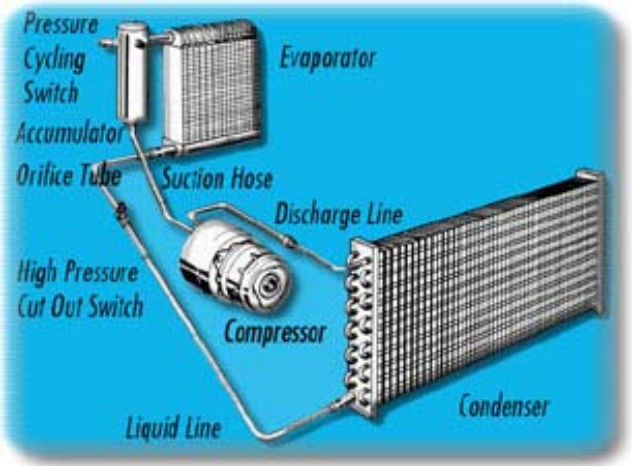
If flushing is for oil removal only and backing out debris is of no concern, then it would be acceptable to perform one flush in the normal refrigerant flow direction (top to bottom).

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 process.

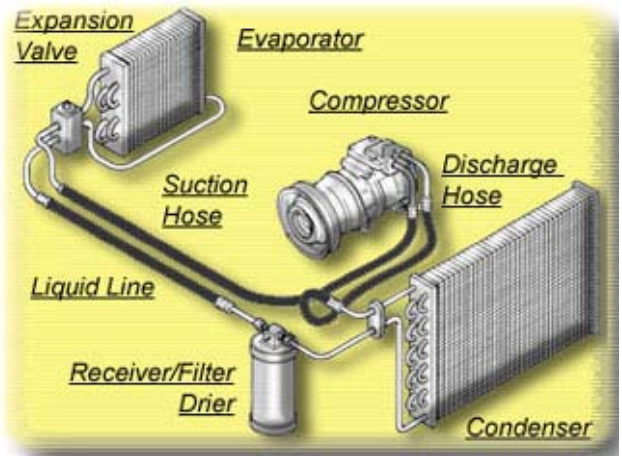
EVAPORATORS

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 direction 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 Refrigerant flusher 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. For all other HECAT models, and any other flushing method, removal of the TXV will be required.

FAC-200

A/C COMPONENT FLUSHER

FLUSHER OPERATION

1. With both tanks empty, remove filler cap and fill the flush tank with no more than 2 gal. of clean flush (Hecat Safe-Flush A/C recommended). DO NOT OVERFILL.
2. Replace the filler cap hand tight. Wrench tightening of the cap is not required.
3. Select (Hecat FAD-100) or make up the proper adapters and attach to the A/C component or lines. Do not over tighten.
4. Quick connect the flush and return hoses to the adapters; to make your first flush in the direction according to the information provided in the "Tips for A/C Component Flushing".
5. With the solvent valve in the off position, attach CLEAN, FILTERED, & DRY compressed air (60 PSI min.) to air inlet quick coupler nipple.
6. Open the flush valve to begin first flush. A restriction or no flow will not allow the flusher to pulsate properly and may indicate a hard blockage, which may require additional attention. Use the free flowing storage fitting to verify the flushers performance. Continued flushing efforts may show improved results, if not the component should be replaced.
7. When the initial flow of contamination is seen in the return line, flush for approximately 60-75 seconds, flush longer if you feel it is necessary. Pay attention to the contamination in the return line T-strainer. (following the next step to safely stop flushing) Clean the T-strainer as needed and repeat until you are satisfied.
8. Close the solvent flush valve leaving the air connected for a short (10-15 seconds) air purge to recover the majority of solvent volume, and then disconnect the air line from the flusher; allowing a moment for system pressures to equalize. Now with little mess you can open and clean the T-strainer, or swap the flush lines as outlined in the next step.
9. If you need to flush in the opposite direction, swap the flush and return hoses at the quick coupler connections.
10. Reconnect the air line and then open the flush valve to flush in the opposite direction for approximately another 60-75 seconds, using up the remainder of the 2 gallons.
11. Be sure to monitor clear hose and T-strainer for cleanliness of returning flush. If flush is clean, pulsing is strong, and no more debris is appearing in the T-strainer, we now know the heat exchanger is clean. Turn off the flush valve and disconnect the air line.
12. If additional flushing is necessary, use only filtered or fresh fluid. Do not put used solvent back into the flush tank.
13. Before beginning the very important air purging process, it is recommended that you drain the used solvent from the recovery tank to limit solvent mist and fumes.
14. To drain the recovery tank, pour the contaminated fluid out of the recovery tank.
15. After draining the flusher, reconnect the flushers return hose to the lowest port and connect your CLEAN, FILTERED, & DRY compressed air line directly to the adapter on the highest port and allow for a 20 to 30 minute full flow air purge. The recommended 20 to 30 minutes is for Hecat Safe-Flush A/C. If you are using another flush product you should follow that manufacturer's recommendations for air purging.
16. Disconnect lines. Flushing & Purging is now completed. Follow test procedure on next page.
17. Always be sure to clean the debris from the return line T-strainer after every flush.
18. If you cannot recycle or filter solvents then the flush should not be reused.
19. Please, always dispose of contaminated fluids in the proper manner.

If you have any problems with this unit, please contact the manufacturer for technical assistance directly at 1-800-380-9501 or contact us through our web site at www.hecatinc.com. We will be happy to answer your questions and assist with any problems.

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 (or the return line with T-strainer) 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 will now be loose and dry and should 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, waste oils, or solvents are blown out with this test; it is highly recommended that the technician should blast more or repeat the flushing & purging process until they have confirmed their complete satisfaction in a clean and dry component.

TAKING CARE OF YOUR A/C FLUSHER

As with most any air tool, the proper care is imperative to its performance and useful life. In the case of this A/C flusher, proper care in not only important and required for the life of the tool; but the improper care of this tool, can and will most probably be reflected in reducing the quality of the A/C repair work you are performing. KEEP IT CLEAN!

The use of FILTERED, CLEAN, & DRY AIR is necessary to prevent the rust and corrosion that would occur over time inside of the flusher tanks. It is just as important and also necessary that we are not contaminating the A/C system we are trying to clean with oily, dirty, and moisture laden air.

The use of a clean and effective flushing chemical such as HECAT SAFE-FLUSH is also very important. Although it is possible to filter or recycle the cleaner a few times for reuse, it is important to limit such activity and to change it out and use clean and fresh fluid as often as possible. There will be little or no benefit found in trying to clean an A/C system with a dirty flushing fluid and a dirty and contaminated flusher.

Finally, drying out/removal of the cleaner from the component is most important and requires a considerable volume of air that must be clean. Always test to confirm the complete removal of the oils, particulates, and solvent; never assume.

If you would like to read and understand more about the specific nuances of A/C flushing, what works, what does not, and why; please visit out web site for more information (www.hecatinc.com), and read the "Flushing Technical Paper" that will be found on the "article" page.

HECAT Safe-Flush A/C

Air Conditioning 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 is CARB compliant and tested with our "Pulsating" Flushers through the activated carbon vent filter, does not exceed California VOC emission standards.

- Available by the case (4-1gal.).
- Case includes (2) replacement filters (for the FAC-300 & FAC-400 models).
- Ships via UPS (31 lbs).
- DOT classification - not regulated.
- Breaks down deposits.
- Environmentally & User friendly.
- No noxious fumes or odors.
- No need for special ventilation.
- Miscible with PAG, POE, & Mineral Oils.
- Compatible with system seals & hoses.
- Low boiling point ensures that residual is removed during air purge process.
- Easily disposed of with waste oils.
- Safe for use in Waste Oil Heater.
- Can also be used as a drop in low VOC parts washer solvent.

Air Purging – Connecting only filtered and dry shop air to the highest component port. Air purge the component for approximately 20-30 minutes. When system has been reassembled it is recommended to pull a deep vacuum for at least 1 hour to flash off any residues remaining from the air purge process. MSDS is available at www.hecatinc.com.

HECAT FAD-100

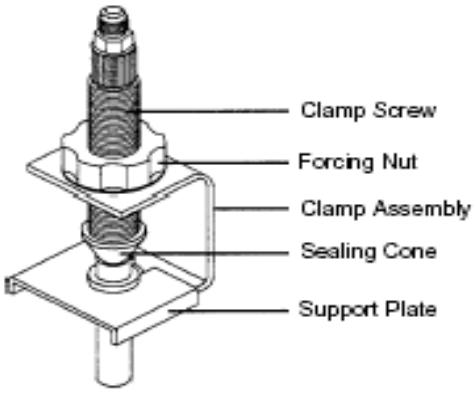
Universal A/C Adapter Kit

PATENT PENDING

Perfect for Flushing & Vacuum Testing A/C Components

- For use with many types of flush equipment and methods.
- Can be installed on most foreign and domestic A/C hose or component tube stub ends.
- NEW: Now includes 90 durometer Buna-N Rubber sealing cones for a ► more positive seal to vacuum & Pressure test components.

- Seating of the sealing cone into the fittings or tube ends does not require any tools.
- Slotted support plates allow for different size tubes or line nuts to be supported.
- Chamfered areas on the support plates will allow the flared end of the tubes to sit level.
- The clamp screw terminates with a 1/4” male refrigerant flare to allow for universal use.
- The internal flow path of all components is 0.250” minimum to allow for high flow flushing.



Included in this Kit:

(1) #300031 - Storage Case (w/ foam insert)
(2) #300012 - Zinc Plated U-Clamp
(2) #300013 - Zinc Plated Clamp Screw
(2) #300014 - Solid Brass Forcing Nut
(2) #300024 - Support Plate (1/2" tube)
(2) #300023 - Support Plate (5/8" tube)
(2) #300022 - Support Plate (3/4" tube)
(2) #300021 - Support Plate (7/8" tube)
(2) #300020 - Support Plate (blank for manifolds)
(2) #300017 - 3/8” Tube Seal (UHMW)
(2) #300018 - Cone Shaped Seal (UHMW)
(2) #300018B - Cone Shaped Seal (Buna N)
(2) #300019 - Concave Seal (UHMW)

Heat Exchanger Cleaning & Applied Technologies
HECAT, INC
(800) 380-9501 Est. 1982 www.hecatinc.com

HECAT, INC.

WARRANTY STATEMENT

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

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. 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 one year or lifetime warranty shall NOT apply to any flusher…

- **That has failed due to misuse, neglect, or accident.**
- **That shows evidence of rust, corrosion, or material failure from the use of corrosive or incompatible liquids.**
  - **Do not use Gasoline, Brake Fluid, Water, Acids, Corrosive liquids, foaming products, and known Ozone depleters.**
- **That has been tampered with or repaired by an unauthorized person**
- **That shows any evidence (rust) from the failure to filter and supply DRY air.**

If you have a problem with this flusher, please call HECAT at 1-800-380-9501 or you, can contact us through our web site at www.hecatinc.com.

Warranties issues are handled directly by the manufacturer. In many cases HECAT may be able to quickly deliver a replacement part that will correct the problem and reduce the down time and shipping costs associated with returning a unit.

If a return is necessary, you must contact HECAT and obtain a return authorization number before returning any unit to the manufacturer. HECAT will evaluate warranty claim and then, if approved, repair or replace at its option any unit returned.

Units for warranty evaluation must be properly packaged and shipped freight pre-paid to the manufacturer's specified location. Any flusher returned must be accompanied by a letter referencing the return authorization number, description of the malfunction, proof of purchase with date purchased, owner's name, address, and contact information. Proof of consistent and repeat SAFE-FLUSH purchases/use will be required if claiming extended warranty coverage.

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.