

Model MARK IV

Transmission Oil Cooler 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.

TABLE OF CONTENTS

- SAFETY WARNINGS
- RETURN LINE ID CHART
- FLUSHER OPERATION
- SAFE-FLUSH TRANS FLUSHING FLUID
- SAFE-FLUSH TRANS MSDS
- TRANS ADAPTER KITS
- WARRANTY STATEMENT

HECAT, INC.

TRANS COOLER 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. 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 chemicals and solvents. Chemicals and solvents can cause injuries.**
- **Only qualified professionals must operate equipment. Operator must be familiar with the chemicals and solvents being used, and the dangers of working with pressurized air 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.**

TRANSMISSION RETURN LINE ID CHART

<u>MANUFACTURER</u>	<u>TRANSMISSION MODELS</u>	<u>THE TRANS RETURN PORT IS:</u>
General Motors	TH125 / TH125C / 3T40	Top
General Motors	TH180	Rear
General Motors	TH200 / TH200-4R	Bottom
General Motors	TH325 / TH325-4L / TH350 / TH350C	Top
General Motors	TH400 / 3L80 / 3L80H	Top
General Motors	440-T4 / 4T60 / 4T60E	Horizontal Fitting
General Motors	700-R4 / 4L60 / 4L60E / ST300	Top
General Motors	4T80E	Main case
General Motors	4L80E	Lower front
General Motors	TH425	Outer, farthest from Torq. Conv.
General Motors	MX17 / A130L / F3A	Bottom
General Motors	Aluminum Powerglide	Top
Ford	A4LD / AXOD / AOD-E / 4R70W	Top
Ford	FMX / C3 / C4 / C5 / C6 / E40D	Rear
Ford	AOD / FIOD / AXOD-E / A4XN / A4XS	Bottom
Ford	CD4E / F4EAT / ATX	Nearest Pump
Chrysler	TF904 / TF727 / A500 / 518 / 618 / AW4	Rear
Chrysler	A404 / 413 / 470 / 670 / 42LE	Top
Chrysler	A604 / 41TE	Front
Chrysler	(Mitsubishi) KM170-KM175 / F4A / W4A	Farthest from differential
Honda	2, 3, & 4 speed	Nearest to differential
Honda	L4 / ML4A	Case (not bellhousing)
Mercedes	4 bolt pan	Drivers side
Mercedes	6 bolt pan	Passenger side
Renault	4139 / MJ / ML1 / MB	Bottom
Subaru	4EAT	Rear
Subaru	ECVT	Below and right of pump
Subaru	M41A	Case
Isuzu	AW55 / AW30-80LE / 4L30E / JF403E / NPR300	Rear
Isuzu	RL3F01A / RN3F01A	Bottom
Mazda	F3A	Bottom nearest pump
Mazda	F4A-EL / 4A-EL / G4AX-EL / L4A-EL	Nearest Pump
Mazda	3N71B / L3N71B / JM600	Rear
Mazda	N4A-EL / R4A-EL / R4AX-EL	Rear
Nissan	RN3-F01A / RL3F01A	Bottom
Nissan	RL4-F02A / RE4F02	Rear
Nissan	RE4-F03A / RE4F04A	Rear
Nissan	3M71B / 4N71B	Rear
Saturn	All	Near filter
Toyota	All rear wheel drive	Rear
Toyota	A55 / A55F	Rear
Toyota	All front wheel drive except above	Bottom
ZF	3HP22	Passenger side
ZF	4HP22 / 4HP24	Bottom

MARK IV TRANSMISSION OIL COOLER FLUSHER/RECYCLER

Machine Operation

Before Flushing

- Check and drain into a cup if necessary, the condensate exhausting air filter. This is located under the medical activated carbon air vent filter. It is not necessary to turn the air on to drain this item.
- Place the DRAIN valve on the back of unit and the three control valves (AIR, FLUSH, RECYCLE) on the control panel in the OFF position.
- Remove filler cap at back of machine and install 2 gallons of an approved flush. A list of approved flushes can be found on our web site at www.hecatinc.com. Fluid level will be visible in the sight tube on the back of the flush tank. **Do Not Overfill.** Using Hecat Safe-Flush exclusively will extend the one-year manufacturers warranty to a *Lifetime Warranty*.
- Using the necessary adapters, connect the flusher hoses to the cooler in a manner that will allow for the first flush to be in the opposite direction of normal oil flow. It is critical that back flushing is done first.
- With all the control valves in the OFF position, connect a filtered and dry shop air supply. Unit has internal regulator set at 80 PSI, max inlet 250 PSI.
- Before beginning the flush operation, disconnect the clear return hose from the back of the machine. Place open end of this hose into a waste oil container. Carefully open the AIR valve toward PURGE AIR position for 5 seconds and then OFF, to purge waste oil from the cooler. This will dramatically extend the useful life of your flush by limiting the amount of transmission fluid contaminating your flush.
- Reconnect the return hose to the back of the machine.

Flushing

- Turn the AIR valve to the FLUSH AIR position & then the FLUSH valve to the ON position and flush for approx. 45 seconds, this will blast approximately ½ of the 2 gallon load (to the bottom of sight tube) of fluid through the cooler system. Pay attention to the contamination seen in the return line T-strainer, flush longer if you feel it is necessary.
- **NOTE:** If you encounter a restricted cooler, no flow, and no pulsating action, connect the hoses to the storage fittings on the back of the flusher and test the machine. If the flusher operates properly with a strong pulse connected to the free flowing storage fittings, you have a hard blocked cooler that will require longer flushing, additional attention, or possibly replacement.
- If a good strong pulse is present, this confirms adequate cooler flow by generously exceeding the generic flow verification test of 2 quarts in 20-30 seconds.
- Turn the AIR & FLUSH valves to the OFF position.
- Reverse the hoses at the cooler quick connections and repeat the flushing operation for another approx. 45 seconds until the remaining flush has been completely used; this time can also be extended at the technician's discretion.
- It is recommended to always completely use the solvent and RECYCLE before storing to prevent accidental overfilling by the next user.

Purging

- With the FLUSH valve OFF, turn the AIR valve only to the PURGE AIR position and allow the system to air purge for 3 to 5 minutes or longer.
- Turn AIR valve OFF, this completes the flushing operation.

Recycling

- WARNING: Never attempt to RECYCLE with AIR & FLUSH valves ON. Turn the AIR & FLUSH valves OFF before engaging RECYCLE valve.
- Monitor the flush tank sight gauge or listen for increased airflow to indicate recycling is complete; turn the RECYCLE valve OFF, recycling is completed.
- NOTE: Should the flushing tank be emptied during the flushing operation, it is not necessary to change the position of the hoses or disconnect from a cooler to recycle the flush. With the AIR & FLUSH valves OFF you can turn ON the RECYCLE valve and the flush will be moved through the particle filters and returned to the flush tank so you can return to flushing as much as you want.

Changing Fluid

- Because conditions of use are out of our control, we rely on the Technicians to use good judgment as to how frequently to drain the flusher, install new particle filters and new flush. Recycling removes the contaminant particles but does not remove the waste transmission oils. Accumulation of waste oils in the flush will decrease its cleaning effectiveness. Flushing of several extremely dirty coolers in succession will obviously contaminate the flush much more rapidly and decrease the number of coolers that can be flushed before changing the fluid. We do anticipate you should be able to recycle your flush, at least 10 but no more 20 times.
- With all valves OFF and shop air supply connected to the flusher, connect both flushing hoses to each side of the storage fittings on back of the machine
- Be sure to perform the RECYCLE operation as instructed above.
- Remove the drain hose from its stored location and place open end of hose in a suitable size (2 gal.) drain container(s).
- Turn the AIR valve to the FLUSH AIR position and open the DRAIN valve SLOWLY to avoid fluid being blown from the hose too rapidly. Allow fluid to flow from drain hose until only air comes from the hose.
- Turn the AIR valve to the OFF position allowing pressure to dissipate, then close the DRAIN valve.
- Disconnect shop air before attempting to remove filler cap to refill.
- Please, always dispose of contaminated fluids in the proper manner.

Filter Service

- Clean the return line T-strainer after every flush.
- The flusher is equipped with non-bypass spin on particle filters to clean the fluid during the recycling operation. These filters are in the recycle circuit only and have no effect on the performance of the flushing process. A slower than normal recycling process will be the only indicator of restricted filters.
- New filters are recommended with every or at least every other fluid change.
- Spin on filters: Use Fram PH2951 or equivalent and can be sourced locally.
- 2 replacement filters will be supplied at no additional charge with every case of Safe-Flush Trans purchased. Order some today and don't forget the Lifetime Warranty.

Any problems or questions should be directed to Hecat, Inc. at 1-800-380-9501 or visit our web site at www.hecatinc.com.

Hecat Safe-Flush Trans

Transmission Oil Cooler Flush

The most common fluid used to flush a transmission cooler circuit with Hecat's Pulsating Flushers has been Mineral Spirits and other similar White Solvents (Varsol, etc.). If you are **NOT** facing restrictions on its use where you live then it is still an acceptable and approved flush for use in the Hecat "Pulsating" Flushers.

The California Air Research Board has identified Mineral Spirits as an excessive VOC emitter. Hecat developed Safe-Flush Trans to address this hazard to the health of automobile technicians. After extensive testing with many different compounds we have found the formula of Hecat Safe-Flush Trans combined with our Patented "Pulsating" Flusher, has the highest cleaning qualities without all the hazards of many other solvents used in the industry. Tested with our "Pulsating" Flushers, Hecat Safe-Flush Trans does not exceed California VOC emission standards.



- Ships UPS Ground (31 lbs)
- Available by the case (4-1gal.).
- Includes 2 **FREE** filters (used on the Mark III and Mark IV Flusher models).
- DOT classification - not regulated.
- Operator safe & friendly.
- Breaks down waxy deposits.
- Breaks down varnishes.
- No noxious fumes or odors.
- No need for special ventilation.
- Miscible (blends) with all transmission fluids so any minor trace residue will fully dissipate into the system without any harm.
- Tested to be compatible with all common transmission materials.
- Easily disposed of with waste oils.
- Any Hecat Flusher that uses Safe-Flush Trans exclusively, Hecat, Inc. offers an

extended **LIFETIME WARRANTY**

If you wish to use another flush, your one-year manufacturer's warranty will apply as long as it is an approved flush. If you have any questions about flush approvals contact Hecat, Inc. at 1-800-380-9501. www.hecat-inc.com.

Note: It is the Technician's responsibility to research and follow local, state, and federal regulations in regards to the flush chosen for use and the disposal of the used flush and its original containers. Because conditions of use are outside of Hecat's control, we can assume no liability for results obtained or any damages that occur from the use of this product. MSDS is available upon request.

MSDS – HECAT SAFE-FLUSH

EMERGENCY PHONE NUMBER: 1-800-380-9501

Last Revised: March 2006

<u>SECTION 1</u>	<u>COMPANY IDENTIFICATION AND CHEMICAL</u>
Company Name:	Hecat, Inc
Address:	2910 Ridge Ct. Cumming, GA 30041
Phone/Fax:	770-205-5600/ 770-205-5633
Trade name:	Hecat Safe-Flush A/C & Hecat Safe-Flush Trans
Chemical name:	Synthetic Hydrocarbon Cleaner
Composition:	Hydrocarbon Mixture – Cas# 64742-47-8 / P-Menta-1, 8-Diene – Cas# 5989-27-5
Application:	Flushing fluid used with or without Hecat flushing equipment to clean automotive heat exchangers.
<u>SECTION 2</u>	<u>COMPOSITION / INFORMATION ON INGREDIENTS</u>
General:	This product is non-hazardous. The product contains no known Carcinogens. No special warning labels are required Under OSHA 29 CFR 1910-1200.
<u>SECTION 3</u>	<u>HAZARDS IDENTIFICATION</u>
Appearance:	A/C version - Clear liquid / Trans version - Red dye added.
Known hazards:	Contains no known hazardous ingredients
<u>SECTION 4</u>	<u>FIRST AID MEASURES</u>
Eyes:	Flush with clean lukewarm water. Seek physician's assessment if eyes are inflamed
Skin:	Wash affected areas thoroughly with soap and water. Wash contaminated clothing.
Inhalation:	Avoid breathing oil mists. Remove to fresh air. If breathing is difficult, get medical attention.
Ingestion:	Do not induce vomiting. Force fluids. Has a laxative effect.
<u>SECTION 5</u>	<u>FIRE FIGHTING MEASURES</u>
Flash point:	165 - 170 F min.
Flammable limits:	N/A
Auto ignition temp:	N/A
Fire & explosion hazards:	Low fire hazard. Do not cut, drill, or weld empty containers
Extinguishing media:	Dry chemical foam, water spray, and carbon dioxide for small fires.
Fire fighting procedures:	Contain liquid, cover with extinguishing agent; use water to cool fire-exposed containers.
<u>SECTION 6</u>	<u>ACCIDENTAL RELEASE MEASURES</u>
Spill or leak	Contain spill, absorb with commercial absorbents, or by using pumps.
Waste Disposal:	Dispose in approved containers through a licensed waste reclaimer.
<u>SECTION 7</u>	<u>HANDLING AND STORAGE</u>
Storage temp:	<120 F recommended.
Shelf life:	12 months in original closed HDPE container.
Precautions:	Not for internal use. Avoid prolonged contact with skin, eyes, and clothes.
<u>SECTION 8</u>	<u>EXPOSURE CONTROL / PERSONAL PROTECTION</u>
Eye protection:	Chemical goggles if splashing is likely. Normally none required.
Skin protection:	PVC or Nitrile gloves if in direct contact for more than 2 hours. Normally none required.
Respiratory protection:	If mist is present, wear approved organic respirator. Normally none required.
Ventilation:	General ventilation.
Exposure limits:	N/A
<u>SECTION 9</u>	<u>PHYSICAL AND CHEMICAL PROPERTIES</u>
Appearance:	A/C version - Clear liquid / Trans version - Red dye added.
Boiling point:	> 300 degree F
Vapor pressure:	< .4 mm/hg
Specific gravity:	0.83 (water = 1)
Volatiles, % volume:	100%
Odor:	Very slight hydrocarbon odor.
Solubility in water:	Non soluble
Evaporation rate:	< 1 (butyl acetate = 1)
<u>SECTION 10</u>	<u>REACTIVITY</u>
Stability:	Product is stable.
Hazardous polymerization:	Will not occur.
Incompatibilities:	Strong oxidizers and chlorine.
Decomposition products:	Analogous compounds evolve, carbon monoxide, carbon dioxide, and other undefined fragments when burned.
General:	<u>SECTION 11</u> <u>TOXICOLOGICAL INFORMATION</u>
<u>SECTION 12</u>	Acute LD. >5000mg/Kg (rat: oral) Practically non-toxic. Negative when tested by Ames test.
General:	<u>ECOLOGICAL INFORMATION</u>
<u>SECTION 13</u>	Biodegradable CEC L33T82 > 80% @ 45 days
Waste disposal:	<u>DISPOSAL CONSIDERATIONS</u>
<u>SECTION 14</u>	Used product must be disposed of in according to federal, state, and local environmental regulations.
Technical name:	<u>TRANSPORTATION INFORMATION</u>
DOT hazard class:	Synthetic hydrocarbon cleaner
U.N./N.A.#:	Not regulated.
Product label:	Not regulated.
<u>SECTION 15</u>	Hecat Safe-Flush
OSHA status:	<u>REGULATORY INFORMATION</u>
TSCA status:	Non hazardous under 29 CFR 1900 1200
RCRA status:	N/A
<u>SECTION 16</u>	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)
General:	<u>OTHER INFORMATION</u>
	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 Flushing Adapters For Transmission Oil Coolers

The **BASIC Trans Adapter Kit** will fit most domestic and import applications. Includes 12 compartment storage box with room to add the OEM quick connects listed below or some of your own creations.

NOTE: The **BASIC Kit** is **included** with the Mark II, Mark III, & Mark IV flusher models.



BASIC Kit includes:

- (from top left, clockwise)
- (2) 14 x 1.5mm **female banjo**
- (2) 5/16" SAE inverted flare fittings
- (2) 3/8" SAE inverted flare fittings
- (2) 1/2" SAE inverted flare fittings
- (2) 3/8" (10mm) beaded barb
- (2) 5/16" (8mm) beaded barb
- (2) 3/8" SAE male flare fittings
- (2) 5/16" SAE male flare fittings
- (1) 12 compartment storage case

The following OEM quick connect adapter sets are available as an additional purchase.



FORD SET



GM SET



CHRYSLER SET

HECAT, Inc. welcomes the information that will help us identify and develop kits for late model applications. If you have such information or are in need of a specialty kit, then please do not hesitate to call us at 1-800-380-9501 with this information. HECAT, Inc. reserves the right to change design, specs, and materials without notice. See the full line of Hecat products at www.hecatinc.com.

HECAT, INC.

WARRANTY STATEMENT

HECAT, Inc. offers with any model HECAT® Flusher; a ONE YEAR LIMITED WARRANTY.

This warranty covers all manufacturing defects in materials and/or workmanship for one year from the date of purchase. This warranty is offered to the original purchaser only, and is not transferable. Original dated proof of purchase is required. See warranty claim instructions below.

HECAT, Inc. also offers a **LIMITED LIFETIME WARRANTY**. This offer is limited only to the Professional Pulsator® Series (HECAT® Flusher Models: FAC-200, FAC-400, MARK II, and MARK IV). This extended warranty offer is contingent upon the exclusive use of HECAT® SAFE-FLUSH® only. This warranty guarantees the internal operation and function of the pulse performance for a lifetime. This warranty does not cover service items or the normal “wear and tear” issues with external items such as the finish, cover, wheels, hoses, filters, quick couplers. Proper fluid exchanges, maintenance, and care of the equipment is required. This warranty is offered to the original purchaser and is not transferable. Original dated proof of purchase is required. Documentation (proof of purchase) of consistent SAFE-FLUSH® purchasing activity will also be required. See warranty claim instructions below.

NO WARRANTY WILL APPLY TO ANY HECAT® FLUSHER...

- That has failed due to abuse, misuse, neglect, or accident.
- That has been tampered with, modified, or repaired by an unauthorized person.
- That shows evidence of rust, corrosion, or material failure/reactions from the use of corrosive, incompatible, or inappropriate flushing chemicals. Do not use Gasoline, Brake Fluid, Water, Acids, Corrosive liquids, and/or foaming products.
 - Use only manufacturer recommended cleaning chemicals.
 - Use only clean, dry, and filtered compressed air.

CHEMICALS, ADAPTER KITS, & SPARES ARE FIT FOR USE ONLY; NO WARRANTY IS OFFERED.

INCIDENTAL OR CONSEQUENTIAL DAMAGES occurring as a result of the use or failure of this equipment is not covered by the manufacturer’s warranty. There are no other warranties implied or stated.

WARRANTY CLAIM INSTRUCTIONS:

1. Warranty issues, as well as after warranty service and repair needs, are handled directly by the manufacturer.
2. If you have a problem with this product, please contact HECAT, Inc. directly for the most immediate assistance. Tel. 800-380-9501, Tel. 770-205-5600, Fax. 770-205-5633, or use contact page at www.hecatinc.com.
3. As in many cases, HECAT, Inc. may be able to quickly deliver a replacement part with instructions to correct the problem; thus eliminating lost use time and shipping costs associated with returning a unit.
4. If a return is necessary, you must obtain a Return Authorization (RA) number, before returning any unit to the manufacturer. Original Equipment and SAFE-FLUSH® Proof of purchase(s) may be required.
5. Units for warranty evaluation must be properly packaged and shipped freight pre-paid to the manufacturer’s specified location. Do not ship collect (unexpected and unknown collect shipments may be refused).
6. Upon receipt, HECAT, Inc. will evaluate any warranty claim and then, if approved, repair or replace at its option, and return unit to customer. Warranty repairs are returned prepaid within USA only.
7. If for any reason a warranty repair claim is unfortunately declined; justification (in writing, if necessary) and reasonable repair (if possible) or replace options will be provided.