



INSTRUCTIONS FOR INSTALLING AND OPERATING CIRCULATING TANK HEATERS



Caution

To obtain satisfactory results from your external type heater, please read the following information carefully.

Check application guide before installing heater. This is not a universal heater. It is designed to work in listed applications only.

Using any sealer or any additive to the coolant could shorten the life of the heater.

Do not use a Kat's engine heater when using a 100% solution of anti-freeze.

After the heater has been installed according to instructions, have your service station, garage or a trained technician check your anti-freeze solution. On permanent type anti-freeze, a solution too strong as well as too weak will freeze. If your coolant congeals, it will stop the flow of liquid through the heater housing and hoses and cause the heater to burn out. Our heater guarantee is void when this happens or when there is evidence of inadequate coolant.

To obtain maximum protection from freezing, consult your antifreeze manufacturer's recommendations.

Five Star Manufacturing reserves the right to make any changes to the design or appearance it deems necessary to any of its products at anytime without notification, and these changes will not obligate Five Star to replace or change any previously manufactured products.



Warning

This unit is to be used to heat engine coolant only. If used to heat any other liquid, particularly petroleum based products; it may result in an explosion and or fire.

Outside of heater will achieve very high temperatures; it could burn the skin if touched. Keep all combustible material at least 1 foot from heater

This heater is sold as a complete unit. Do not attempt to service unit.

OPERATION

This unit operates on the principal of thermosyphoning. There is no mechanical pump contained in this unit. This unit boils the coolant and this action will move water from the top of the heater into the engine block and continue to circulate the coolant until it reaches a temperature of at least 150 degrees.

TANK HEATER INSTALLATION PRODEDURES

Note: Do NOT begin installation until you have reviewed and understand the preceding warnings and cautions.

Do not drain engine coolant or cut any hoses until:

- 1) Check the application guide for proper use.
- 2) Read the installation instructions fully and contact Five Star should you have any questions about the instructions.
- 3) You must then determine where to best locate the tank heater and what mounting options you are going to use.
- 4) The tank heater requires two connections to the engine coolant system. The heater must be mounted in a vertical position with the coolant flow arrow pointing up.
- 5) Locate the coolant drain plug in the block. If there is no drain plug, use the lower radiator hose connector (this is a separate item and must be purchased to match the size of your lower radiator hose) to supply the coolant to the inlet of the heater. (See figure 1)
- 6) Depending on whether you use the lower drain plug in the block or the lower radiator hose connector, the outlet side of the heater will change. If you use the preferred lower drain plug in the block the furnished "Y" will be spliced into the heater hose going to the engine or water pump, make sure there are no restrictions. If you use the lower radiator hose heater connector, splice the "Y" to the heater hose that goes to the engine or the manifold.
- 7) Now that you are ready to begin your installation drain and clean the engine cooling system. Mount the heater in a vertical position. Using the mounting bracket supplied, position the heater as low as possible to achieve the best gravity drain of coolant possible. Remember to position the heater so that the outlet side does not have more than 12" to 18" to pump the coolant back into the engine. It is ideal to use the frame rail, the fender or fire wall to attach the mounting bracket. This will minimize vibration and add life to the heater. Leave sufficient clearance around the heater so that the hot surface of the heater does not come in contact with any moving or heat sensitive parts or material.
- 8) If you are using the lower drain plug in the block, be sure to clean the hole using a small probe. Use the adapter furnished to screw into the hole, the use of pipe dope or tape is recommended. You may have to use an adapter if the hole is not a 1/8" NPT. Use a 5/8" diameter heater hose for connecting the inlet line to the heater. Use 2 of the #12 hose clamps

furnished to secure the hose to the adapter and the heater. Make sure that the coolant hose is secure by placing the clamp behind the barb and tighten the clamp to 30 inch pounds.

- 9) Install the outlet side by first attaching the heater hose to the heater. Next determine which heater hose that you are going to “Y” into. Cut the heater hose in half and use 2 #12 hose clamps to reconnect the hose. Direction the “Y” so that the coolant will flow towards the engine not back to the fire wall. The “Y” is stepped so that you can reconnect a 5/8” or 3/4” hose.
- 10) Refill the engine with the heater outlet line disconnected at the engine until outlet line is full of coolant. This eliminates airlocks in the heater and hoses. Now connect the bottom of the “Y” to the top of the heater and finish filling engine. Do not use more than 60% concentration of anti-freeze. Check all connections for leaks.
- 11) Route the cord to any convenient point and tie cord down to prevent any damage or strain. CAUTION: Be sure to keep cord away from hot surfaces and moving parts.
- 12) Run the engine for 30 minutes to open engine thermostat.
- 13) Check for coolant leaks and fill to the proper level.
- 14) Shut off engine and let it cool.
- 15) Once the engine is cool plug the heater into a grounded outlet.

TROUBLE SHOOTING

Feel the outlet hose at the engine connections. It should get hot.

If the tank is hot and the top hose is not hot, unplug the heater, disconnect and bleed the outlet line at the engine. Refill and test again.

If the outlet hose is not attached properly (See figure 5 and 6) reattach so that you have a maximum of 12” to 18” of hose.

If the lower inlet hose is hot the heater may be mounted too high, the heater is not mounted vertically, or “Y” fitting is not pointed toward the engine.

If the heater does not get hot check the electrical outlet. Most 15 amp outlet cannot service more than 1800 watts if you have a 1500 watt circulating tank heater you cannot have more than 300 additional watts on all the outlet serviced by that breaker. Never start the engine with the heater plugged in. If the element is exposed to air during a start up, the heater will burn up in seconds.

Always unplug heater and wait 1-2 minutes before starting engine. The only way to check a heater to see if it is functioning properly is by using an Ohms meter or some other device that will check continuity. If the heater has continuity it is functional. Five Star checks all heaters a minimum of 5 times during assembly to assure continuity.

TERMS OF LIMITED WARRANTY

Warranty:

Products manufactured by Five Star Manufacturing are warranted for one year from date of sale to original consumer against defects in workmanship and materials providing the installation and use of these products are in accordance with the manufacturer’s instructions and applications. The manufacturer’s only obligation shall be to repair or replace at manufacturer’s option the product consumer. Defects or failures due to normal wear, incorrect installation, improper voltage, improper usage, improper alterations, or handling, accident, misuse, abuse, neglect, mishandling, misapplication, improper or extraordinary use, inconsistent use with any instruction or recommendation issued by the manufacturer or by any other condition beyond our control, as to any and all of which the manufacturer will be the sole judge, are specifically excluded from this warranty. No other liability of any kind, arising from the use of the product, whether defective or not, is assumed.

No implied warranty is exclusive and in lieu of all warranties, whether written or oral, expressed, implied, or statutory. As a condition of use of these products the purchaser waives, to the fullest extent permitted by law, any warranties beyond those specifically set forth herein.

Replacement and Repair Policy

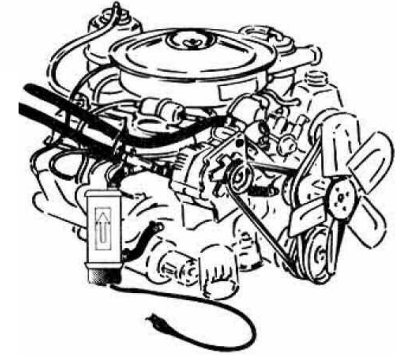
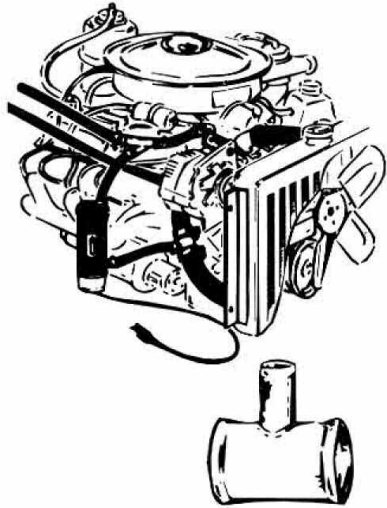
- 1) In returning heater for replacement or repair, include all the information possible as to what may have caused the trouble. Check the extension cord. In some cases it has been faulty. All returned heaters must be labeled and identified with warranty tags.
- 2) Service charges will be made on units which:
 - A) Were burned in air (operated without heating element being immersed in water or coolant
 - B) Failed due to restricted circulation, improper installation, air pockets in hose lines, or dirty cooling system.
 - C) Are damaged through no fault of the manufacturing
 - D) Failure due to installation on other than recommended vehicles.
 - E) Are not defective.

Figure 1

When using a lower hose connector, "Y" the heater into the heater hose entering the motor or a thermostat housing. (Left)

Available in: 1", 1¼", 1½", 1¾", 2"

When using lower drain plug "Y" the heater into the heater hose entering the motor or water pump. (Right)



DO NOT USE ENGINE HEATER WHEN USING A 100% SOLUTION OF ANTIFREEZE

Figure 2

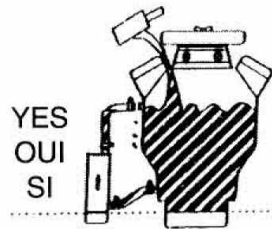


Figure 3

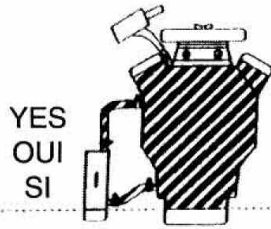


Figure 4



Figure 5

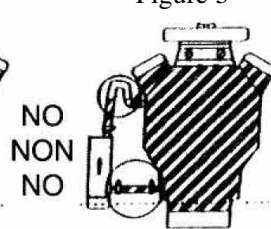
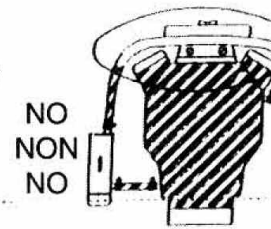


Figure 6



LOWEST LEVEL OF WATER JACKET

5 MOST COMMON FAILURE CAUSES FROM INSTALLATION OR OPERATOR ERRORS

- * Pre-heaters plugged in while engine is running.
- * Air not bled from system (run engine until maximum system pressure is reached before plugging it in).
- * Plugged in before it is installed to see if it gets hot (trust us **IT WILL**).
- * Tank style heater installed in the wrong physical location.
- * Tank style heater not connected to the right locations.