Installation Instructions For:
#57001 Radiator GM Truck/SUV
#57291 Radiator & Fan GM Truck/SUV
Fits MOST 1999-2012 Vehicles
(Vehicles with automatic transmission will require cooler kit #4118GMT, sold separately, prior to installation)

Note: To view these instructions or to view a video of this product installation, visit www.flex-a-lite.com or call 1-800-851-1510 for assistance. It is HIGHLY recommended to read and review these instructions prior to installation.

Note: always read instructions and verify kit contents prior to installation.

| Radiator .................................................. 1ea. | Electrical Connector Kit ......................... 1ea. |
| Pre-Mounted Fan ....................................... 1ea. | VSC Controller Kit .................................. 1ea. |
| Bracket, Top Rad. Mount Left Hand .... 1ea. | Wire Bundle ........................................ 1ea. |
| Bracket, Top Rad. Mount Right Hand .... 1ea. | Instruction Sheet ................................... 1ea. |
| Mounting Hardware Kit .............................. 1ea. | Flex-a-lite Decal .................................... 1ea. |

Removal of Old Radiator and Fan (if needed):

1. As a safety precaution, be sure the vehicle is COOL enough to work on; also disconnect the negative (-) battery cable.
2. Open the radiator fill cap. Locate the radiator drain and drain the radiator fluid into a spill-resistant container.
3. Remove the plastic cover from the top of the radiator that covers the front support. Use a flat-head screwdriver to pop and release the push-clips.
4. For ease of removal and installation, remove the air intake box and tube. This will be re-installed after final installation.
5. Remove the upper fan shroud: The fan shroud is made of a top half and a lower half. Remove the upper hose from the radiator inlet. Release the plastic hose clamp securing upper hose routed along top of upper shroud. Pop the push-clips that hold the upper half to the lower half. Remove the 2 upper bolts that hold the upper shroud to the top cross member. At this point, this upper half should be free. Remove this upper shroud from the vehicle, save the plastic factory hose clamp by removing it from the shroud. This will be used later to re-secure the upper hose.
6. Remove the clutch fan: Support the clutch face and/or fan while spinning the nut of the fan counterclockwise with a 1-3/8” open-end wrench. Spin completely off and remove the fan from the vehicle.
7. Remove the lower shroud: Pull up on the lower shroud which sits in saddles with tabs.
8. Disconnect the rest of the radiator hoses: The overflow tank and steam hose will come off. Then remove the transmission hoses (if applicable) by pulling the retaining ring away from the tank connection and pulling the “C” clip off of the connection by pulling up with a scribe or small flat-end screwdriver. Finally, disconnect the main outlet hose at the bottom of the radiator over the drain container. Use a rag or plug for these ports as they may leak upon removal.
9. Remove the radiator: Remove the 2 bolts from the top flanges located at both sides of the radiator. This will free the radiator. Tilt the radiator towards the engine and lift slowly as to not damage the radiator or any other components. Note: Save the 4 rubber bushings from the factory radiator (2 at top and 2 at bottom. These will be used later in the install of the new radiator.)

Installation of the New Radiator and Fan (if required):

1. Placing the radiator: Place the factory lower bushings in the lower radiator support on the vehicle. The driver’s side may have 2 locations for placement. Use the nearest location to the center of the vehicle. Once these are in place, lower the radiator into place as the guide pins of the new radiator seat into the bushings.
2. Upper Radiator Mounts: Find the left and right upper mounting brackets and slide on the factory upper bushings. Loosely mount the brackets to the left and right on the top/engine side of the radiator utilizing the supplied T-bolts, washers and nylock nuts. Use the upper factory bolts to mount the radiator to the original support locations. Tighten those first, then snug up the nuts on the T-bolts of the radiator.
3. Connect Hoses: Place the hose nipples to the tanks if necessary for the overflow and the steam port with thread tape. Do not over-tighten! Then, connect the overflow and steam port hoses. Bolt the short side of the tube support bracket to the inside drivers side threaded insert in the shroud. Connect...
the plastic factory hose clamp to this bracket then connect the larger upper inlet hose to the driver side.

4. Install the automatic transmission cooler (if applicable): Start by removing the factory grill to expose the front side of the A/C condenser area. This consists of 4 twist-lock fasteners (2 top and 2 bottom) turning about ¼ turn counter-clockwise to release. There is one bolt by the hood latch in the center. When these are loose, the grill has some clips out by the headlamps that can be “gently” pulled out to remove. The grill should come off in one piece. Note: This removal process works with the early generation. You may need to consult your maintenance manual for newer vehicles.

5. Remove existing cooler (if applicable): Because the existing cooler is designed to run through the radiator tank for additional cooling, there is no longer a place to connect these. Using Flex-a-lite cooler kit #4118GMT, we can replace this with a higher capacity cooler for direct transmission cooling. Disconnect the tubes by pulling the retaining “C” clips with a pick or small flat-head screwdriver and remove the oil lines. Keep a drainage container and rags handy as the factory cooler still contains fluid. Remove all the bolts holding the oil cooler and existing brackets. Retain the factory bolts for later installation.

6. Temp Sensor: There is an ambient temperature sensor that “may” be located on the driver’s side of the cooler. Unbolt but do not remove. Finish removing the cooler.

7. Mount #GMT4118 cooler into place with factory mounting locations and fasteners: Note: To mount the upper portion, some models may require drilling a 7/32” hole into the support and using the provided self-tapping screws to mount. Caution!! Do not go ALL the way thru the cooler support; this could damage the A/C condenser.

8. Re-Install Temp Sensor: Use the bracket contained in the kit to sandwich between the bolt and the new cooler bracket in the lower driver’s side. Attach the temp sensor with proper side facing the grill.

9. Connect Cooler Lines: Splice into the factory lines coming from the transmission. Use the barbed adapters provided in the kit to connect the lines to the new cooler. Routing these lines to the passenger side is ideal.

10. Replace the Fluids: Fill the radiator with the factory recommended coolant. Add factory recommended transmission fluid to the appropriate level. Note: It is recommended to follow factory maintenance procedures to re-fill the system and check after the engine has run for some time to verify proper levels prior to operation.

FOLLOW THESE INSTRUCTIONS CAREFULLY TO AVOID DAMAGING THE CONTROL UNIT, FAN MOTORS, AND YOUR VEHICLE! WHEN CRIMPING WIRES, ALWAYS USE A QUALITY CRIMPING TOOL (DO NOT USE PLIERS OR OTHER DEVICES)

1. Find a convenient location to mount the Variable Speed Control (VSC). Note: If you choose to mount controller to face of shroud, follow these mounting instructions. Attach the VSC directly to the top or front face of the fan shroud. Using the holes in the controller cover for a template, drill two 5/32” holes. Secure the VSC with the 2ea. screws provided. (see Detail 1)

2. Drill two ¼” holes to the left of the VSC to pass the yellow and purple wires through to the back side of the shroud (see Detail 1). Drill one ¼” hole in the support rib on the back side of the shroud to pass the motor wires through. (see Detail 1 & 2)

3. Place both red motor wires side by side and smoothly twist together. Completely insert pair of wires into one end of yellow butt connector. Crimp connector to secure. Repeat with black motor wires to another yellow insulated butt connector.

Red motor wire is (+) positive and black is (-) negative.

4. Feed the thick purple and yellow wires from the control unit through the holes you drilled in step #2.

5. Insert yellow wire into the open end of butt connector containing the two red motor wires and crimp connector securely. Insert purple into the open end of butt connector containing the two black motor wires and crimp connector securely. (see Detail 3)

6. Determine the length of wire needed to connect the red and black VSC power leads to the battery terminals and trim appropriately. Crimp a large yellow ring connector to the end of the black wire and connect to the negative (-) battery terminal, but do not connect the red wire yet.
7. Find a convenient place to mount the circuit breaker between the VSC and the battery positive (+) terminal and use the two screws provided to mount it. Cut the red wire at the point where you mounted the breaker. Find the red boot and lay it on the breaker as shown in Detail 3. Connect small yellow ring connectors to the ends of the wires and attach them to the circuit breakers. **NOTE: BE SURE TO CONNECT THE END COMING FROM THE BATTERY (+) TO THE “BAT” TERMINAL ON THE BREAKER (COPPER COLORED).**

Now press the top of the boot over the breaker terminals to protect from arcing. Connect a large ring connector to the junction box end and connect it to the terminal as shown.

8. Locate fuse box. Find a circuit that is “hot” when the key is in the “ON” position. **NOTE: DO NOT use the day time running lights or brake/taillight fuse, or any fuse directly related to the fuel or ignition system!** Attach the included fuse tap to the fuse. Attach a pink female connector to the thin red wire included and connect to the fuse tap. Trim the wire so that it will reach the VSC. Attach a pink female connector to the other end of wire and connect to **terminal #8** on the VSC.

9. Locate the wires going to the A/C clutch. Determine which wire is ground and which wire is positive by using a volt meter. Connect or splice the thin green wire to the positive (+) wire of the A/C compressor using the blue “Piggy-Back” connector. Determine length of green wire needed to reach VSC. Rout green wire then trim to length. Attach a pink female connector to the wire. Connect this wire to terminal #8 on the VSC.

10. Locate the temperature probe. Gently push probe through fins in radiator as close to the upper radiator hose as possible, leaving about ¼” of the probe protruding out of the core. The rubber cap will not be used in this application. Determine length of wire needed to reach VSC.

**IMPORTANT:** Strip insulation back about 1” and fold the wire onto itself to effectively double the thickness of the wire before connecting the pink female connectors. Then attach this wires to terminals #10 & #11. Both wires need to be connected but it doesn’t matter which wire goes to each terminal.

11. If manual switches (Flex-a-lite #31148) have been purchased, attach them as follows: to override engine temperature to turn fans off, connect the switch to terminal #5 on VSC to send a negative (-) signal. To override engine temperature to turn fans on, connect the switch to terminal #6 on the VSC so that the negative (-) signal is sent.

**WIRING CONNECTIONS**

<table>
<thead>
<tr>
<th>#1 Battery Negative* (BLACK)</th>
<th>#2 Negative to Fan* (PURPLE)</th>
<th>#3 Positive to Fan* (YELLOW)</th>
<th>#4 Battery Positive* (RED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5 Negative Override Signal OFF</td>
<td>#6 Negative Override Signal ON</td>
<td>#7 A/C Compressor Negative Signal</td>
<td>#8 A/C Compressor Positive Signa</td>
</tr>
<tr>
<td>#9 Ignition Positive Signal*</td>
<td>#10 Temp Sensor Wire*</td>
<td>#11 Temp Sensor Wire*</td>
<td>#12 Fan Output Indicator</td>
</tr>
<tr>
<td>#13 A/C Signal Indicator</td>
<td>#14 Ignition Signal Indicator</td>
<td>#15 Overdrive Condition Indicator</td>
<td>#16 Thermo Switch</td>
</tr>
</tbody>
</table>

* mandatory connections
**Initial start-up and Adjustment Procedure**

1. Turn ignition on. After 6 seconds, LED #L4 should light up. If not, check to make sure that there is 12 Volts at terminal #9 on VSC. The delay is to allow starter to start the vehicle without the fans drawing any power.

2. With your engine running, engage the A/C. The fans should come on and cycle with the A/C clutch. LED #L1, L3 and L4 should be lit when the fans are running. If they do not turn on, verify that the A/C clutch is engaged and make sure you have a positive signal when the clutch is engaged at terminal #8 on the VSC. Shut off A/C and let engine continue to idle, or drive the vehicle a short distance to bring the engine to operating temperature (monitor the engine’s temperature gauge).

3. Verify that operating temperature has been reached by feeling the upper radiator hose. Hot coolant should be flowing through the hose into the radiator. If the fans have not cycled on yet, slowly adjust the screw on the VSC until the fans cycle on. Turning the screw counterclockwise will keep the engine at a lower temperature, and turning in the opposite direction, clockwise, will keep the engine at a higher temperature. **NOTE: THE TOTAL MOVEMENT OF THE ADJUSTMENT SCREW IS ABOUT ¾ OF A TURN. TURNING THE SCREW BEYOND THE LIMITS WILL DAMAGE THE UNIT!** Once desired temperature is set, let the engine continue to idle and make sure the fans will continue to cycle to maintain desired temperature. When the fans are running, LED’s #L1 and L4 should be lit.

**The Variable Speed Control features**

At the set temperature, the fans will come on at 60%; this reduces the load on your charging system. If the temperature rises, the fan speed will increase. If your set temperature is 195° and 205° the fan speed will increase from 60% to 10%. So after a 10-degree rise from the set point, the fans will be running at 100%.

**To Register Your Product:**

Visit our website @ [www.flex-a-lite.com/warranty-registration](http://www.flex-a-lite.com/warranty-registration)

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**The Flex-a-lite Limited Warranty:**

Flex-a-lite Consolidated, 7009-45th Street Court East, Fife, Washington 98424. Telephone No. 253-922-2700, warrants to the original purchasing user, that all Flex-a-lite products to be free of defects in material and workmanship for a period of **365 days (1 year)** from the date of purchase. Flex-a-lite products falling within 365 days (1 year) may be returned to the factory through the point of purchase, transportation charges prepaid. If, on inspection, cause of failure is determined to be defective material or workmanship and not by misuse, accidental or improper installation, Flex-a-lite will replace the product free of charge, transportation prepaid. **Flex-a-lite will not be liable for incidental, progressive or consequential damages.** Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may have other rights, which vary from state to state. The Flex-a-lite warranty is in compliance with the Magnuson-Moss Warranty Act of 1975.
Flex-a-lite Consolidated limited warranty

Flex-a-lite Consolidated warrants its aluminum radiators to be free from defects in materials and workmanship for a period of one year from the date of purchase at retail by the original purchaser. This warranty is extended only to the first purchaser of any such radiator at retail. If the Flex-a-lite radiator is used in any racing application, repaired or altered, this warranty is considered null and void, it also does not cover any radiator repaired or altered in any way. If products such as transmission cooler or electric fan are attached with cable ties or similar fasteners that run through the radiator core, the warranty is voided.

This warranty does not cover labor, materials not manufactured by Flex-a-lite, or shipping charges. The retail purchaser is responsible for the appropriate use and application of the product. This warranty does not cover the effects of physical or chemical properties of water, steam, or other liquids used in the radiator. Radiators used without an adequate proportion of premium quality antifreeze/coolant are not covered by this warranty. Flex-a-lite aluminum radiators require a correct proportion of quality coolant, which contains aluminum corrosion inhibitors in the formula.

Claims for internal damage of the engine, components, or user’s vehicles are not covered by this warranty. It is the responsibility of the Flex-a-lite product user to monitor engine operation and have proper detection devices installed to warn the user of overheating. Specific exemptions to the warranty include tube damage, ballooning or bursting from excessive engine operating temperature, internal corrosion due to inadequate proportions of antifreeze/coolant, or damage to radiator resulting from a collision damage.

Flex-a-lite shall not be responsible for damages to its product or injury to persons using the product when improperly opening radiator pressure caps, burst hoses, etc. Flex-a-lite shall not be responsible for injury or harm to persons or property caused by persons or vehicles using our products.

The purchaser’s remedy for breach of this warranty, exclusive of all other remedies provided by law, is expressly limited to repair or replacement of any part or parts. All products returned for warranty consideration must be returned through the point of purchase with all transportation expenses prepaid. Upon receipt of the product, Flex-a-lite will examine the product to determine the condition and validity of the claim.

Radiators or products received, which were damaged in shipping, should immediately be reported to the shipping carrier as damaged, and claims of damage filed accordingly. Contact the transport carrier (UPS, truck line, etc.) for procedures in filing damage claim with the carrier or their agent. Do not return product damaged in shipping to Flex-a-lite.

Some states may not allow a limitation on the duration of any implied warranty. The above warranty may not apply to you. This warranty grants you specific legal rights, and you may have other rights, which vary from state to state.
## Troubleshooting the Variable Speed Controller

| Problem                                           | Possible Cause                                      | How to find out                                                                 | Solution                                                                                                         |
|---------------------------------------------------|----------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---|
| Fans do not turn on regardless of temperature.    | Ignition wire not hooked up to proper source.      | Make sure you have a switched source hooked up to terminal number 9. Turn your key on and LED #4 should light after 5-6 seconds. | If there is no light, then provide a 12 volt source to terminal number 9.                                         |
| LED #4 lights up, but my fans still do not turn on.| Thermistor probe may not be hooked up properly.   | Remove the thermistor probe from the circuit board. Place a jumper across terminals 10 & 11. | Remove the connectors and make sure that the 22 gauge wire is doubled up before the new connector is installed to ensure proper contacts. |
| I have tested the thermistor probe but the fans still do not turn on. | Fuse to battery positive post blown. Wires to terminals 1 & 4 aren't properly hooked up. | Inspect the fuse in the holder. Check for ground and power through lines hooked to terminals 1 & 4. | Replace fuse. Hook up wires for terminals 1 & 4 to ground and power, respectively, to battery.                  |
| Fans still do not come on.                        | Motors wired improperly.                            | Remove the wires from terminals 2 & 4 and hook them directly to power and ground to check motors. | Check wiring to motors to ensure they are wired properly. If motors do not spin after checking wiring to them, call tech support at 1-800-851-1510. |
| Fans come on and it seems like they are only at 100% instead of the initial 60%. | They are actually on at 60% and haven’t reached 100% yet. | Ground terminal 6.                                                             | This is the fan at 100%                                                                                         |
| Fans do not come on until the temperature is very hot. | Thermistor probe not located in optimum position. Temperature set to high. | Check location of thermistor probe. Locate temperature screw in center of VSC. Note: maximum of rotation of screw is ¾ of a turn! | Thermistor should be located nearest the upper radiator hose. Turn adjustment screw until fans come on. Turning further in this direction will keep engine at a lower temperature. |
| Fans were working properly but have suddenly shut down. | Usage of a chassis ground and/or alternate source for power other than positive terminal on battery. | Trace wire from terminals 1 & 4 to find source.                                | Move to posts on the battery.                                                                                   |
| I turn my engine on and the fans come on but the engine is cold. | A/C lead hooked to the wrong terminal. A/C turned on. | Trace the wire hooked to either number 7 or 8 terminal and check polarity of the wire. Check if defrost activates a/c or if the a/c is on. | Hook the wire to the proper terminal on the a/c compressor and the corresponding terminal at the VSC. Shut off a/c or leave on as this is normal operation. |