



INSTALLATION INSTRUCTIONS

HIGH OUTPUT 2 SPEED RAD FAN ASSEMBLY

PART # 66818, 66819, 66820, 66821,
66822, 66823, 66827 & 66828

Please read these instructions completely before beginning installation

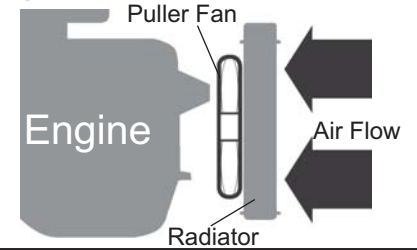
FAN SHROUD ASSEMBLY KIT CONTENTS

QTY.	DESCRIPTION	QTY.	DESCRIPTION
1	Fan Shroud Assembly	16	1/4-20 x 3/4" Hex Bolts
4	Angle Brackets	16	1/4-20 Lock Nuts
1	Rubber Fan Shroud Seal	40	1/4" Flat Washers

IMPORTANT

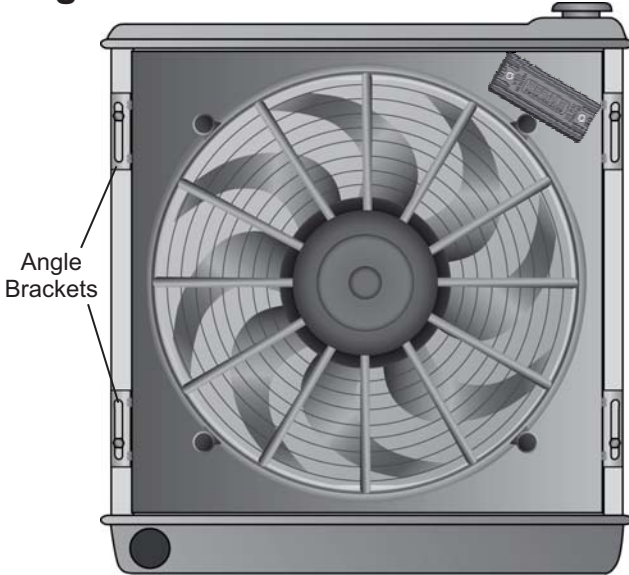
This fan assembly is designed for PULLER APPLICATIONS ONLY Engine side of radiator. (See Diagram #1)

Diagram #1



MOUNTING OPTIONS

Diagram #2 Down Flow Radiator



Cross Flow Radiator

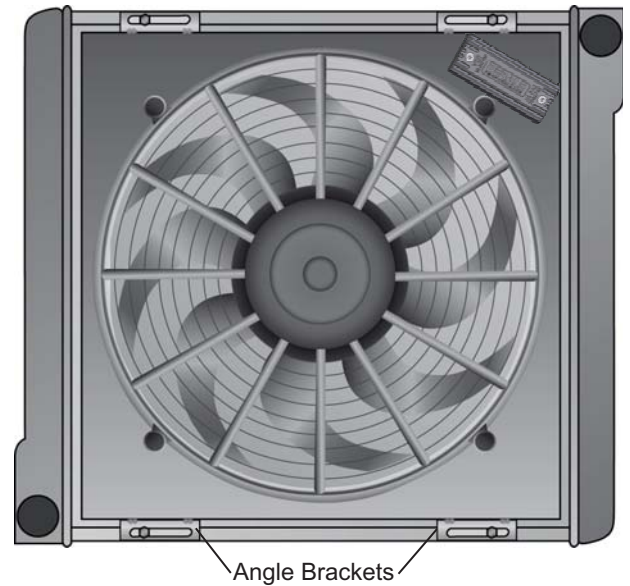
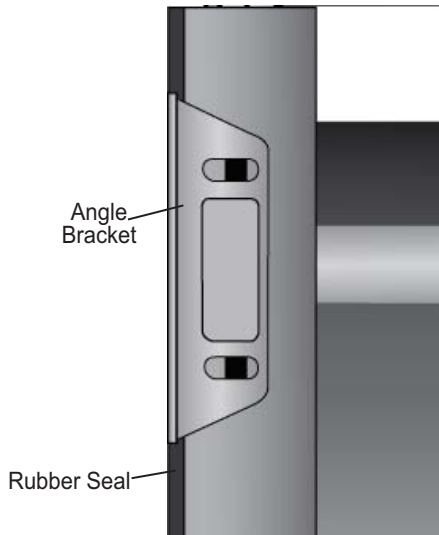
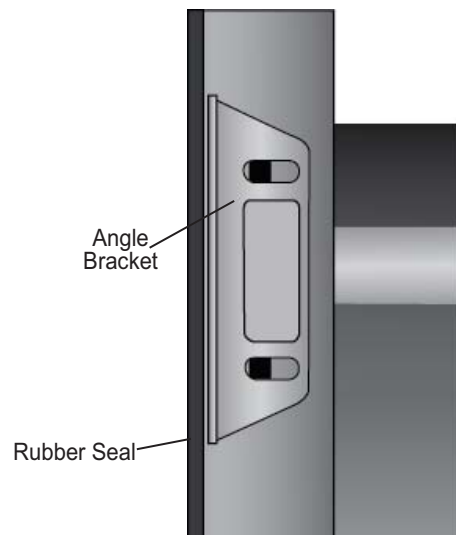


Diagram #3

Option 1 Flush Mount



Option 2 Recessed Mount



INTEGRATED PWM CONTROL MODULE INSTALLATION ON A SINGLE FAN SHROUD

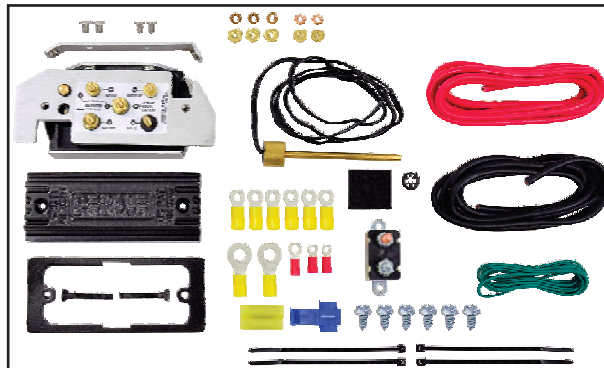
Please read these instructions completely before beginning installation

CONTROL MODULE KIT CONTENTS

QTY.	DESCRIPTION	QTY.	DESCRIPTION
1	Integrated PWM Control Module	1	Retaining Clip
1	PWM Cover	1	50 Amp Circuit Breaker
1	PWM Cover Spacer	1	6ft 10 AWG Red Wire
1	Corner Mounting Bracket	1	6ft 10 AWG Black Wire
3	#8 Lock Washers	1	6ft 22 AWG Green Wire
2	#6 Lock Washers	6	#10 Sheet Metal Screw
3	#8 Nuts	2	Yellow Butt Connector
2	#6 Nuts	2	Yellow 5/16" Ring Terminal
2	6-32 x 1/4" Allen Head Bracket Bolts	4	Yellow #8 Ring Terminal
2	8-32 x 1/4" Allen Head Mounting Bolts	2	Yellow #10 Ring Terminal
2	8-32 x 1-1/4" Allen Head Cover Bolts	1	Red #8 Ring Terminal
1	Thermostat Sensor	2	Red #6 Ring Terminal
1	Radiator Probe	1	Blue Wire Tap Connector
1	Foam Pad	4	4" Wire Ties

TOOLS NEEDED

Drill	Standard Screw Driver
5/32" Drill Bit	(1/8" wide blade)
Multimeter	Wire Stripper
Standard Screw Driver	Wire Crimping Tool
5/16" Nut Driver	7/16" Socket and Ratchet
11/32" Nut Driver	Open End Wrench Set
Allen Wrench Set	



IMPORTANT

The Control Module utilizes an auto resetting circuit breaker to protect the fan(s) and controller circuit. In the event of an electrical short, the breaker will "trip" and open the connection between the battery and the controller. If this happens, turn the vehicle off and let it cool before restarting the system. The breaker will automatically reset.

MAXIMUM CAPACITY: 65 AMPS

HOW IT WORKS

The Derale PWM Control Module is designed to adjust the electric fan speed to maintain the desired engine temperature.

The Control Module has an AC override circuit available that when activated, will ramp up the electric fans to 60% running speed. As the engine temperature increases the fans will increase accordingly.

If the override circuit is not being used for the AC, an optional toggle switch could be connected to it to manually activate fans at 60%.

PWM will automatically increase fan speed if needed to maintain temperature.

Toggle switch part # 16740.

CONTROL MODULE INSTALLATION PROCEDURE

1. Identify the pieces of the Control Module.
 - 1 - PWM Control Module
 - 1 - Corner Mounting Bracket
 - 2 - 1/4" Allen Head Bracket Bolts



2. Install the bracket onto the Control Module using two 8-32 x 1/4" Allen Head Bracket Bolts and an Allen Wrench.



3. From the backside of the shroud slide the Control Module into the mounting corner. (See Diagram #13 on page 6)



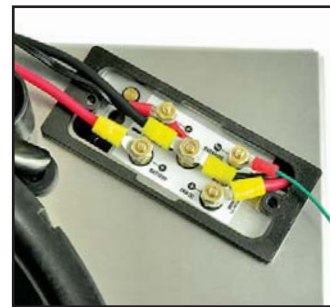
4. From the sides of the shroud thread in two 6-32 x 1/4" Allen Head Bracket Bolts (supplied). Using an Allen Wrench tighten screws.



5. Place Control Module Base into position on shroud, To keep the Base in position you may need to tape it temporarily.



6. Install the Electric fan & run the wiring to the controller and make connections using the correct size connectors. Please reference wiring instructions on pages 4-5 and the quick reference guide on page 6. Fan Positive (+) & Negative (-) wires can be run through the face of shroud, through the wire holes of the Controller as shown. The remaining wires can run from the sides of the Control Module.



7. Position wires to avoid Control Module Cover mounting holes and place Cover onto the Base. Make sure the wires are all within the sealing foam area of cover. Then align holes and thread-in two 8-32 x 1-1/4" Allen Head Cover Bolts using an Allen Wrench.



Note: The above photos are only to show Control Module Installation. Please review wiring instructions on pages 4-5 and Wiring Diagram on page 6.

Thermostat Sensor & Probe Installation, Circuit Breaker Mounting and Wiring instructions are on Pages 3-5.

THERMOSTAT PROBE INSTALLATION

Placement: The Thermostat Sensor is designed to be installed on the outlet side of the radiator, therefore sensing the cooler fluid returning to the engine. (See Diagram #4)



Warning: Do not install the Thermostat Sensor on the Hot side of the radiator, Waterneck or Cylinder heads.



Installation:

1. Take the Radiator Probe and thread it clockwise onto the Thermostat Sensor.
2. Carefully insert the probe assembly into the fins of the radiator until Sensor is flush with radiator. (Probe should not make contact with AC condenser or auxiliary coolers. Probe may be trimmed to allow clearance.)
3. Install the Foam Pad onto the Radiator Probe.
4. Install Retaining Clip onto the Radiator Probe until tight. (See Dia. #5)
5. Route the Sensor Probe wire to the Control Module. The Sensor Wire splits into two wires near the end. Using a Red #8 Ring Terminal, connect either of the wires onto the Negative (-) Sensor Terminal on the Control Module.
6. Using a Red #6 Ring Terminal, connect the remaining Probe wire onto the positive (+) Sensor Terminal on the Control Module. (See Dia. #10)

Note: Sensor Wires are not polarity specific. Sensor Wires can be lengthened if necessary. When lengthening wires always use good quality wire & connections to assure proper function.

INSTALLATION OF ELECTRIC FAN ASSEMBLY TO RADIATOR

Warning: Temperature Probe must be installed Prior to Shroud Installation. See Thermostat Probe Installation Section.

Before installing shroud Reference Diagrams # 2 & 3 on page 1 to decide how the Assembly should be mounted to radiator.

1. Using a table or workbench, lay the Electric Fan Assembly on a flat surface.
2. Take the supplied Rubber Fan Shroud Seal and install it onto the bottom edge of the Fan Shroud Assembly. (See Diagram #6)
3. Cut off any excess Rubber.
4. Identify the four Angle Brackets, 1/4-20 x 3/4" Hex Bolts, 1/4" Flat Washers & 1/4-20 Lock Nuts.
5. Attach the Angle Brackets to the Shroud using two bolts per bracket. (See Diagram #7)

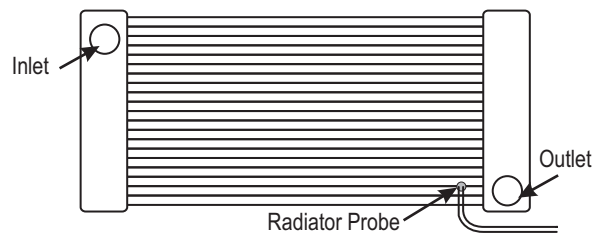
Note: In some applications where the radiator flange is not right up against the fan shroud, longer bolts can be used to space the Angle Brackets. (See Diagram #6) Hardware not included.

6. Position the Electric Fan Assembly against the radiator in the desired location.
7. Using the remaining 1/4-20 x 3/4" Hex Bolts, 1/4" Flat Washers & 1/4-20 Lock Nuts, attach the Electric Fan Shroud Assembly to the radiator. (See Diagram #7)

Note: In some cases the radiator flange may have to be drilled for proper alignment.

Diagram #4

Cross-flow Radiator



Down-flow Radiator

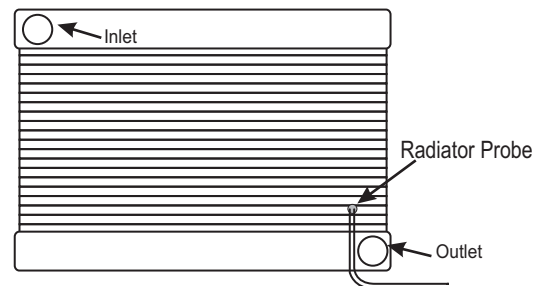


Diagram #5

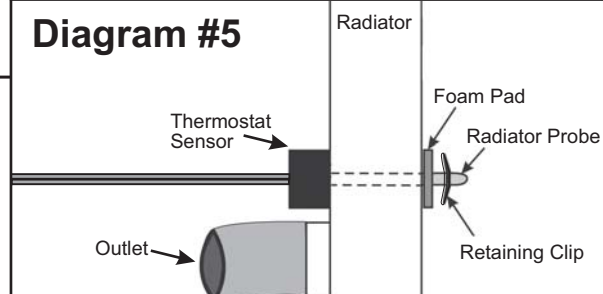


Diagram #6

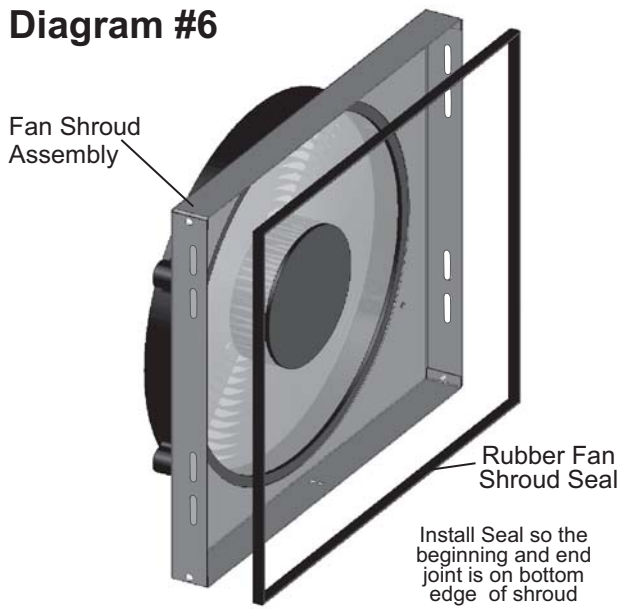


Diagram #7

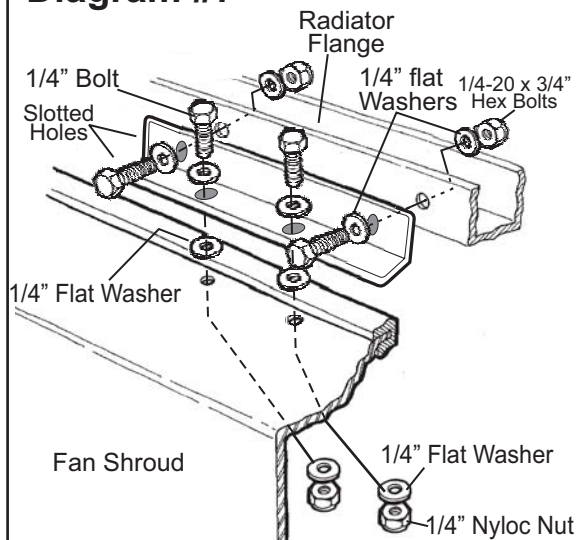
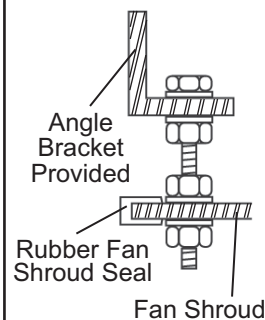


Diagram #8

OPTIONAL MOUNTING



CIRCUIT BREAKER MOUNTING

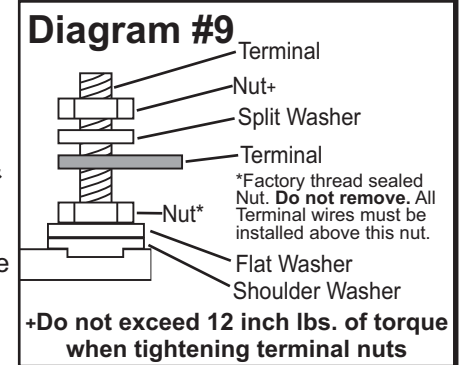
1. Choose a convenient location for the Circuit Breaker that is between the Fan Controller and the Battery.
2. Using the breaker as a template, mark and drill two 5/32" holes.
3. Using the two #10 sheet metal screws supplied, secure the Circuit Breaker in place.

STOP Warning: When following steps 5 and 8, Only connect Battery Positive and Negative Leads direct to Battery. Do not connect to Alternator or Starter. Failure to connect to Battery will Void the Warranty. **STOP**

WIRING

Before starting, disconnect the Negative (-) cable on the vehicles battery. Using the electrical connectors & wire ties provided, follow the instructions below. (See Dia. #9 for proper lug stacking) (Before installing the shroud into the vehicle, the Control Module must be installed. Remove all pieces from the package and locate the two, 6-32 x 1/4" BH allen bolts. These will be used to fasten the Control Module to the shroud as shown on page 2 & Dia. #12 on page 6. Once securely attached to shroud, you may connect the fan wires to the module by following steps 6-9 of the installation section).

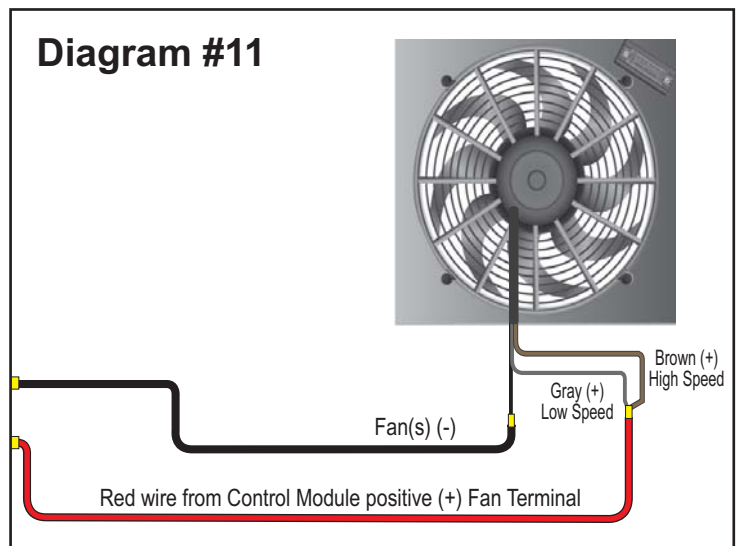
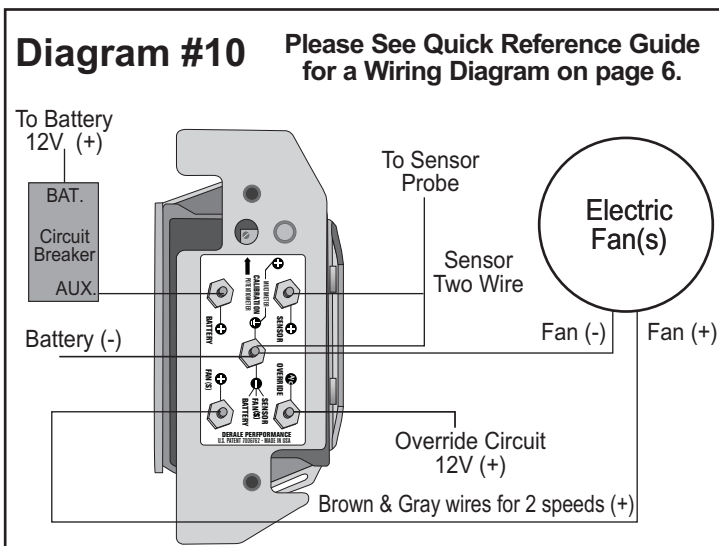
1. Using a Yellow 5/16 Ring Terminal & 10 AWG Red Wire supplied, connect one end of the red wire to the vehicles Positive (+) terminal on the battery.
2. Route the 10 AWG Red Wire now connected to the battery to the Circuit Breaker previously installed and cut the wire to the appropriate length.
3. Using a Yellow #10 Ring Terminal, connect the 10 AWG Red Wire to the "BAT" Terminal on the Circuit Breaker.
4. Using a Yellow #10 Ring Terminal, connect the auxiliary side "AUX" of the circuit breaker to another length of 10 AWG Red Wire.
5. Route the Red 10 AWG wire now connected to the auxiliary side of the circuit breaker to the Positive (+) Battery Terminal on the Control Module Circuit Board and connect using a Yellow #8 Ring Terminal.
6. Using the Red 10 AWG wire and a Yellow #8 Ring Terminal, connect into the positive (+) Fan Terminal on the Control Module.
7. Using a Yellow Butt Connector, connect the loose end of the Red 10 AWG wire connected to the Control Module positive (+) Fan Terminal, connect to the positive (+) Brown wire and Gray wire on the Electric Fan (See Diagram #11).
8. Using a #8 Yellow Ring Terminal, connect the 10 AWG Black wire to the Negative (-) Terminal on the Control Module. Route the other end of the wire to the Negative terminal on the vehicles battery & connect using a 5/16 Yellow Ring Terminal. Do not connect to a chassis ground.
9. Using a Yellow Butt Connector, connect the 10 AWG Black wire to the Negative (-) lead of the fan(s). Connect the other end of this wire to the fan (-) terminal of the Module using a #8 Yellow Ring Terminal.



Green Wire: Override Circuit (Optional)

The green wire is designed to work in two different configurations. When used, this will allow the Electric Fan(s) to be turned on regardless of the temperature of the thermostat. The fan speed will quickly ramp up to 60% and will operate between 60 and 100% as temperature increases. **Note:** Use of the Override terminal is optional and not required for the PWM controller to work properly.

1. A/C Override - Using the Blue Wire Tap Connector provided, attach the green wire to a Positive (+) 12V output on the A/C compressor.
2. Manual Switch Override - Attach the Green Wire to the 12V output on the manual switch (not provided).



TEMPERATURE ADJUSTMENT

The Control Module is set from the factory for use with a 180°F Engine Thermostat. If desired, the temperature can be adjusted using the Multi-Turn Potentiometer on the Control Module.

Reference Diagram #12

1. Using a standard Multimeter (set on DC voltage).
2. Connect the negative lead of the Multimeter to the Negative (-) terminal on the Control Module.
3. Then connect the Positive (+) lead of the Multimeter to the calibration terminal on the Control Module.
4. Using a small screwdriver turn the Multi-Turn Potentiometer on the Control Module until the Multimeter reads the desired voltage.
5. Using a 3/32" Allen Wrench, Reinstall the Control Module cover.

Diagram #12

Adjustment: One complete revolution equals 3 1/2°F
To increase Temperature - turn Potentiometer Clockwise
To Decrease Temperature - turn Potentiometer Counter Clockwise

Engine Thermostat Temp	Calibration Terminal Voltage
160°F	3.16
170°F	2.89
180°F	2.63
190°F	2.38
200°F	2.14
210°F	1.91

VEHICLE TESTING

1. Before you start the vehicle, make sure all wires are safely zip tied and away from any moving parts.
2. Start the vehicle.
3. If the Manual Override function is being used, turn on the A/C or Manual Switch. Electric Fan(s) should start running immediately.
4. Turn off the Manual Override or A/C function & allow the engine to warm up.
5. If the electric fan does not turn on or you feel that it is not set correctly, check all connections and refer to the "Temperature Adjustment" Section above.
6. Once you have the fan cycling on and off using the control module, take the vehicle for a short test drive. For personal preference, some additional adjustment may still be necessary.

(Page 5)



Please direct all technical questions to our Derale tech line at (800) 421-6288

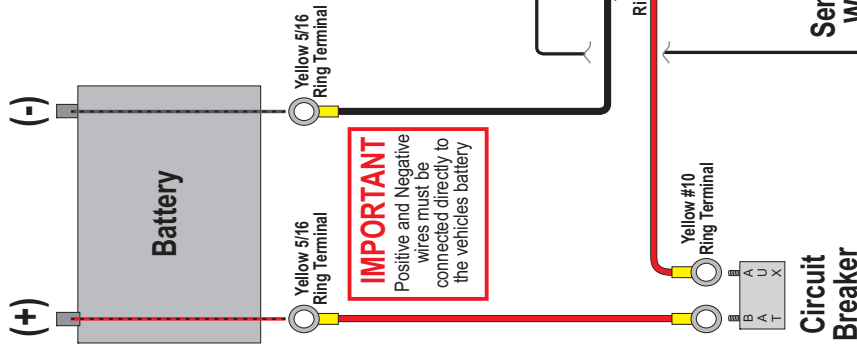


Warning: Installation of accessories should only be undertaken by those with mechanical knowledge and are familiar with working on vehicles. Always use eye protection (goggles, safety glasses or shield). Park the vehicle in a well lit area, on level ground and apply the parking brake. Only work on a cold vehicle that has been sitting overnight, failure to do so will result in severe burns and injury. Before starting the vehicle, make sure no tools or any other items are left under hood that could interfere with or be drawn into moving parts of the engine. Failure to follow instructions can lead to severe damage and personal injury.

Temperature Adjustment
 Factory Preset at 180°F
 See instruction sheet for detailed procedures



Adjustment Screw

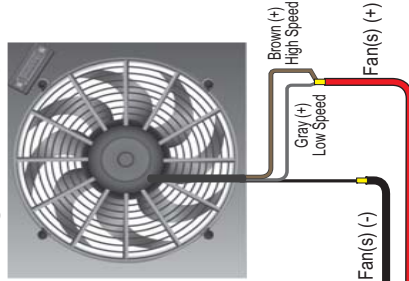


IMPORTANT
 Positive and Negative wires must be connected directly to the vehicles battery

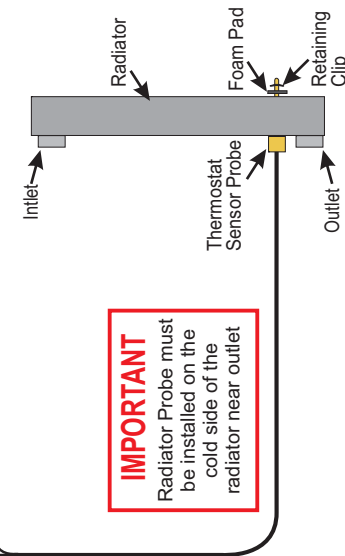
PWM Fan Controller

Optional Override Circuit 12V (+)

Single Fan Setup



Sensor Wire



IMPORTANT
 Radiator Probe must be installed on the cold side of the radiator near outlet

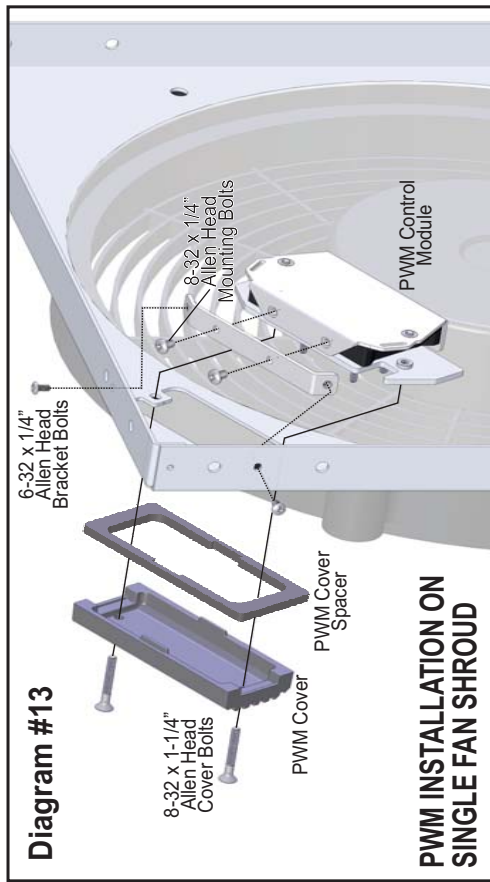
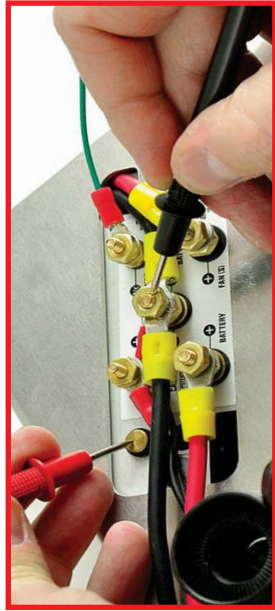


Diagram #13

PWM INSTALLATION ON SINGLE FAN SHROUD