

**WARNINGS**

Blower blades can be quite sharp and can cut fingers or self destruct if impeded.

Use only brushless fans and sealed relays in the explosive atmosphere of a battery compartment.

**FEATURES**

- \* Ventilates enclosed battery compartments, especially for lead acid batteries, to remove explosive gasses, acid fumes, excess heat and humidity.

- \* Turns on automatically when the battery reaches its gassing voltage of 14.0 volts or higher.

- \* Use with one or two 12V Muffin Fans for rapid air exchange.

- \* Starts a 15 minute drying cycle when the voltage drops below 13.8 volts to the float level of most modern charging systems.

- \* After timeout, the blower shuts down automatically with no load on the battery.

- \* Manual ON control for forced ventilation when not in a charging cycle. The 15 minute drying cycle can be started manually for unattended shutdown.

- \* The controller can be mounted on the battery Compartment or at a remote location. The electronics package behind the panel is splash proof and sealed for the corrosive atmosphere. An LED indicator light shows when the blower is operating. A splash proof flush rocker switch selects On, Off or Automatic.

- \* The controller has electronic switching and when combined with a brushless blower all sparks are

eliminated, allowing safe operation in the explosive battery compartment atmosphere. A self resetting electronic fuse protects against accidental wiring shorts with no maintenance or arcing. Stall detection in the blower reduces power consumption until operation can resume safely.

- \* Additional blowers can be added in parallel for large or multiple battery compartments up to a maximum load of 1 amp. Use a sealed 12 volt relay to switch higher loads.

desired. Some sealants may attack the front panel finish so be very careful with application and clean up. After completing the wiring, the electronic module plugs onto the rear of the switch ***being careful to apply pressure on the front of the switch so you do not stress the switch mounting or the panel.***

**IMPORTANT:** Make sure the tabs on the switch are mating all three tabs on the module and stress slightly if necessary to make them line up.

**INSTALLATION**

The output leads should only go to the fan or a relay coil and must not be connected to +12 or ground to avoid defeating the internal fuse and to prevent component failure.

Muffin fans typically mount over a round hole, 3.5 inches in diameter. If the battery compartment is relatively air tight, a vent of similar or larger size should be provided to allow air flow. The direction of flow is marked on the side of the fan. Direct the air flow out of the compartment so the negative air pressure will avoid fumes escaping through uncontrolled crevices.

Holding the switch rather than the panel, carefully unplug the electronics pack from the back of the switch. The control panel mounts over a 2 1/8 inch round hole (same size as door entry locks). Sealant should be applied under the panel if a splash proof installation is

The +12 and -12 terminals connect to battery + and ground respectively. Read the notes under "Problems" for hints on the best place for connection. No additional fuses or control switches are necessary in the circuit however all 12 volt sources should have a main breaker or fuse. The blower connects to the + & - output terminals. Correct polarity must be observed on both cables, however incorrect connection does no damage. Although 22 gauge wire is adequate, 16 gauge wire should be used for mechanical stability.

One or two additional blowers can be added in parallel for larger installations. If a load of greater than 1 amp needs to be switched you can substitute the coil of a 12 volt relay for the blower and use the relay to switch +12 volts to the heavier load. A separate fuse or circuit breaker will be required. Do not locate unsealed relays, circuit breakers or fuses in a battery compartment where hydrogen buildup may cause an explosion.

## OPERATION

OFF completely disconnects the controller and blower.

ON causes the blower to run continuously.

AUTO provides automatic control by battery voltage and the 15 minute timeout after "float" voltage is reached. The voltage monitor has a time delay so momentary voltage spikes do not initiate a blower cycle unnecessarily.

You can manually initiate a 15 minute timed run by turning the switch to ON and then to AUTO. Although the switch passes through OFF on the way to AUTO, the 15 minute time period is not canceled.

## PROBLEMS

### BLOWER NEVER TURNS ON

Some unregulated chargers and most automotive chargers do not go through a multi-cycle sequence so the voltage may never be reaching 14 volts. Use the manual control.

### THE BLOWER TURNS ON AT LESS THAN 14 VOLTS

Make sure the blower is connected to the battery on a circuit that is not carrying charger currents otherwise the voltage being sensed may be higher than that at the battery due to voltage drop along the wire. The same argument applies to the location of the ground connection. Both connections ideally should be as close to the battery as possible.

The voltage setting is 13.9 +/-

0.1 and it is not adjustable. Some panel voltmeters are notoriously inaccurate, so a good quality digital meter should be used for checking. Your panel voltmeter may also be sharing cable runs with other chargers or loads which are causing voltage differences. The sensor averages the voltage over a 5 second time period which may give a different result than a meter.

### THE BLOWER REQUIRES MORE THAN 14 VOLTS TO TURN ON

See the notes above regarding connection. If the blower is sharing a circuit with a load drawing current, the voltage at the blower sensor may be lower due to the drop along the cable.

### THE BLOWER RUNS MORE THAN 15 MINUTES

Make sure you are switched to "AUTO", not "ON" which runs continuously.

The blower timing components are not precise. Typically 15 minutes should be a minimum but times as long as 30 minutes are possible.

The battery charger must remain below 13.8 volts on the float charge to let the blower time out. Any time the voltage goes to 14.0 volts, a new timing cycle will start. Voltages between 13.8 and 14.0 volts may extend the time period proportionally. Some older chargers and most automotive chargers, typically SCR types, produce high voltage intermittent spikes so if the voltage spikes are high enough they may keep the blower on.

### THE TIMER RUNS ONLY FOR A FEW MINUTES

Although the blower turns on at 14.0 volts, it actually needs to rise slightly above this to fully set the timer. If the voltage only just reached 14.0 volts then dropped down, an incomplete timing cycle may result. If the voltage remains in the 13.8 to 14.0 volts range, the LED may glow or cycle on and off and the blower may run or cycle at reduced speed.

### THE BLOWER SHUTS OFF BUT THE LED IS STILL ON

During the slow turn off process, there may not be enough voltage to run the blower but still enough to light the LED.

### THE LED COMES ON BUT THE BLOWER DOESN'T

The lamp may be only partially on, the blower will start when it gets fully on as the voltage rises by about 0.01 volts.

Check the blower for an obstruction. Check the cable integrity to the blower. Check the polarity of the blower cable if it has been removed or altered.

### THE LED COMES ON THEN GOES OFF AGAIN.

Check for loose connections.

If there is an overload or short circuit in the blower wiring, the internal electronic fuse will turn off the power. This has a thermal reset so after removing the power or short circuit, it may take a few seconds to reset.