

THE EXTRACTOR

Surely you would have on many occasions rushed to drive off because it is 'baking hot' inside the car – especially if you have left it in the hot afternoon sun. In Asia, the temperature inside a parked car can reach a high of 50-60°C in a very short time. This device beats the heat by using up to 4 Extractor fans to cool the interiors, it is effective and reliable! It can effectively bring down the high interior temperature by 10-15°C

Normal solar films claims to reflect up to 70% of the sun rays, (*the maximum tinting approved by ROV*), but the remaining 30% heat soon builds up inside the car. The longer it stays in the sun, the hotter the interior gets. Here is where the Extractor can do what solar films cannot, and this is how it works-

How it works-

- A** On reaching 37°C, 2 fans (rated at 0.42A) installed inside the boot compartment force warm air through ventilating fins (positioned on both sides of the boot) out of the car. By making use of the ventilating fins in the boot the original car design remains untouched
- B** If the temperature hits 42°C, 2 more fans (rated at 0.42A each) installed on the rear panel of the car come on to cope with the extra heat by extracting more warm air from the passenger compartment into the boot.
- C** The extractor fans are controlled by temperature sensors at the rear panel. 2 fans in the boot are set to turn on at 37°C, while another 2 fans on the rear panel are set to turn on at 42°C. Falling temperatures will cut off the fans automatically.
- D** The fans are powered by a 12Volt /18 Amps Sealed Lead battery that is separate from the car original battery. Only the temperture sensor are running on the car battery source at only 40mA maximum.
- E** In order to recharge the Sealed Lead battery safely, a 12 Volt 6 Amp automatic AC charger is used to maintain sufficient charge in the battery always.
- F** Since AC chargers are more economical than alternators, a 200W DC-AC Inverter is used to power a 12Volt 6 Amp AC charger that comes with a cooling fan.
- G** Relays are used to switch off the fans while driving and cut off the charging when not driving.
- H** The Inverter needs a constant 12-14 Volts to operate properly. However when starting the car, the internal voltage drops to 9-10 Volts momentarily. To avoid this sudden drop in voltage, a delay relay (6 sec delay) turns on the inverter only after starting the car.

There is no worry about power drain on the Car Battery, as the Charger and Inverter only works when the car engine is running.(the same as all other electrical appliances in the car). The system is maintenance-free except for replacing the Sealed Lead Battery life when its life span runs out (average 18 months' time). For maximum cooling it is best to switch the car air-con to fresh-air intake mode (some cars comes with auto fresh air circulating feature) before leaving the car.

CLAIMS

The use of the various components mentioned and assembled together to perform the cooling process in car's interiors is what, I claim to be my invention Here is what the claims are:

1. The cooling process takes up to four high power extractor fans rated at 0.42 A each. These fans operate in pairs, determined by reset temperatures on the sensor module. When temperatures in the car reaches 35°C two stage 1 fans in the boot compartment starts drawing warm air out of the car. If the temperature gets hotter than 42°C two stage 2 fans located at the rear headboard starts operating to move more hot air from the passenger compartment to the boot compartment then out of the car via the rear wheel covers as illustrated in Fig 4

2. The power supply to drive the fans comes from a rechargeable Sealed Lead Acid Battery rated at 12 volt 18 Ampere. Only a battery of this size or larger is sufficient to run the fans on hot days sometimes 3 hours continuously before recharging.

3. The Recharging only starts when you drive your car, relays automatically turns off the extractor fans and turns on the charging circuit. The charging circuit comprises of a delay relay, a inverter power supply, an a AC 6 Ampere automatic charger. A delay relay only turns on the DC-AC Inverter after cranking the starter motor to start the engine. This way the Inverter gets a steady 12 volt supply from the beginning to end of the journey. A automatic charger makes sure that the battery is never over charged on long journeys, when it is full, the charger turns to low current maintenance circuit.

4. The temperature sensor module has 2 stage turn on and off circuit. Stage 1 turns on at temperature 35°C and above and turns off when temperature fall below 35°C. Stage two turns on at 42°C and turns off below 42°C. In the event of a power failure, the module will return to its preset readings when power is restored. This is the only electronic device that runs on the car's original battery. However it consumes only a very small current therefore will not drain the car battery.

5. To ensure that no foul air enters the car compartment (Fig 4) when the extractor fans is not operating (when the car engine is running) the Stage 1 extractor fans positioned inside the boot compartment has a set of aluminium flaps that closes when the fan stops (Fig 3a) and opens when the fan start blowing (Fig 3b). This devise is simple, effective and reliable, works very much like big ventilation openings in the car boot. Stage 2 extractor fans positioned at the rear headboard do not require aluminium flaps as these openings allow hot air to pass into the boot compartment to be expelled out by Stage 1 extractor fans.

Please refer to drawings 1 and 2