

ICE-BOX^(TM)
REFRIGERATED MEDICATION CABINET FOR AMBULANCES

(Version 1.1)

Manufactured by:

Delta Vehicle Systems, Inc.

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Bayside, NY 11364-2719

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www.deltaveh.com

WARNING:

This product is designed to be installed and serviced **ONLY** by a qualified automotive electrician. Working with automotive batteries can be extremely hazardous. Always make sure you are wearing protective clothing and eyewear whenever working on any motor vehicle. Be sure your work area is properly ventilated.

This product is sold incomplete and requires the fabrication of a Plexiglas door and installation of fiberglass insulation. Please make sure your company is equipped to perform these tasks.

By using this product you are certifying that your agency has proper medical authority to use prescription medications.

BACKGROUND

In the emergency medical services, when an ambulance crew arrives upon the scene of a medical emergency, the EMT's and Paramedics will apply an intravenous fluid line to the sick or injured patient when medically appropriate. This provides an easy method to maintain fluid levels in the patient and provides a convenient path for needed medication. Most medications provided in emergency medicine are given intravenously, because the patient can absorb them more readily and many patients are too ill to take medications orally.

Many useful medications, such as ADIVAN (LORAZEPAM) require refrigeration. Historically, this has limited their application in the field. With the use of a mobile refrigerator, this and other medications can now be stored properly.

In addition, there is a new synthetic blood product named POLYHEME, which is currently in clinical trials. The FDA may approve it for EMS use in the near future. This product requires refrigeration. More information is available at the company's website at www.northfieldlabs.com/

FEATURES

- A) Recessed Design- takes up almost no space in the ambulance
- B) Lightweight- approximately 8 pounds (3.7 kg.)
- D) Simple Installation- only 2 wires- one to 12 volts and one to ground
- E) Totally Automatic- requires no attention from the ambulance crew.
Provides a constant temperature of approximately 40 to 50 degrees F
(4 to 10 degrees C).
- F) Solid state cooling system- no Freon, compressor, condenser, etc.
- H) No moving parts (except cooling fan)
- I) Low voltage shutdown- if the voltage of the vehicle falls below 10 volts, the ICE-BOX shuts down until proper voltage is restored.
- J) Very quiet operation- should be inaudible when installed
- K) 12 volt operation- no inverter or generator required
- L) Designed to hold readily available storage boxes
- M) Built in Surge Suppression- protection from "load dump"
- N) Five Year Limited Warranty

THEORY OF OPERATION

The central component of the ICE-BOX is a solid state device called a THERMOELECTRIC MODULE which can transfer heat from one side to the other. This device has no moving parts. It relies on a phenomenon called the PELTIER EFFECT. Unfortunately, the heat does not disappear, but is sent to the heatsink on the bottom where it is dissipated, just like the coils on the back of a refrigerator, or the outdoor side of a window air conditioner. The heatsink is then cooled with a small fan, similar to the type used in desktop computers.

INSTALLATION REQUIREMENTS

A) The ICE-BOX is sold incomplete to the ambulance builder. It is designed to be mounted into a rectangular hole, cut into the counter area, facing the “action wall”.

B) You will need to fabricate a small Plexiglas door to cover the pan. It should be mounted on hinges and have finger holes or a knob to simplify opening. You may also want to add a lock, which will be covered later in this manual.

C) Electrical installation is very simple. Tie the RED wire to 12 volts and the BLACK wire to ground. If necessary, you can run it through a circuit breaker of 20 amps or more.

D) The ICE-BOX is designed for 12 volt vehicles only. Do not apply any other voltage to the system. If you have other requirements, contact DELTA VEHICLE SYSTEMS for more information.

E) The ICE-BOX requires approximately 14 amps of power to operate. Be sure you have the reserve alternator capacity. It is designed for vehicles that are in continuous use, or are wired to a shoreline with an automatic battery charger. It is a good idea to supply a battery charger with an additional 14 amps to keep the medication refrigerated properly when the ambulance is parked at the station house. For long-term storage, the ICE-BOX is best turned off and the medication placed in a refrigerator. This product returns to a cooling temperature quickly when activated.

F) The green printed circuit board does not create any significant amount of heat. It can be covered with fiberglass insulation, as long as it **DOES NOT** come into contact with any metallic material in the insulation, since this can short circuit the board.

G) This product requires approximately 1 cubic foot (0.03 cubic meters, the equivalent of a 30cm cube) of space below the pan in order to allow the fan to cool the heatsink adequately. Also, it is important that no loose wires or other materials get caught in the fan blades.

H) The ICE-BOX is designed to operate in an air conditioned ambulance with an indoor temperature of a maximum of 80 degrees F (27 degrees C). If the indoor temperature of the vehicle exceeds this temperature, the unit will not fail or be damaged, but may not cool the medications adequately.

I) This product is designed to be installed into materials like Formica and pressed wood, which conduct heat poorly. Do not install it into a metallic countertop since it will conduct the cold temperature away from the chassis.

J) The outside of the aluminum pan should be wrapped in a 3-inch (8cm) by 44-inch (1.1 meter) wide band of aluminum-coated fiberglass. Be sure the aluminum layer is on the outside. As mentioned before, the PC board needs no ventilation and can be wrapped in fiberglass as long as it does not come into contact with the metallic side. Be sure that the fiberglass **DOES NOT** cover the heatsink fins. A suitable insulation is FROST KING Model SP55.

MAINTENANCE

The ICE-BOX is mostly maintenance free. In humid climates however, the unit will condense a lot of moisture from the surrounding air. Wiping it out regularly with a dry paper towel should be adequate. Occasionally, it can be cleaned with a mild soap, for example, dishwashing liquid and warm water on a paper towel. You can also use medical germicides, if desired. **DO NOT** use abrasive cleansers (AJAX, COMET, etc.) since they will scratch the surface coating.

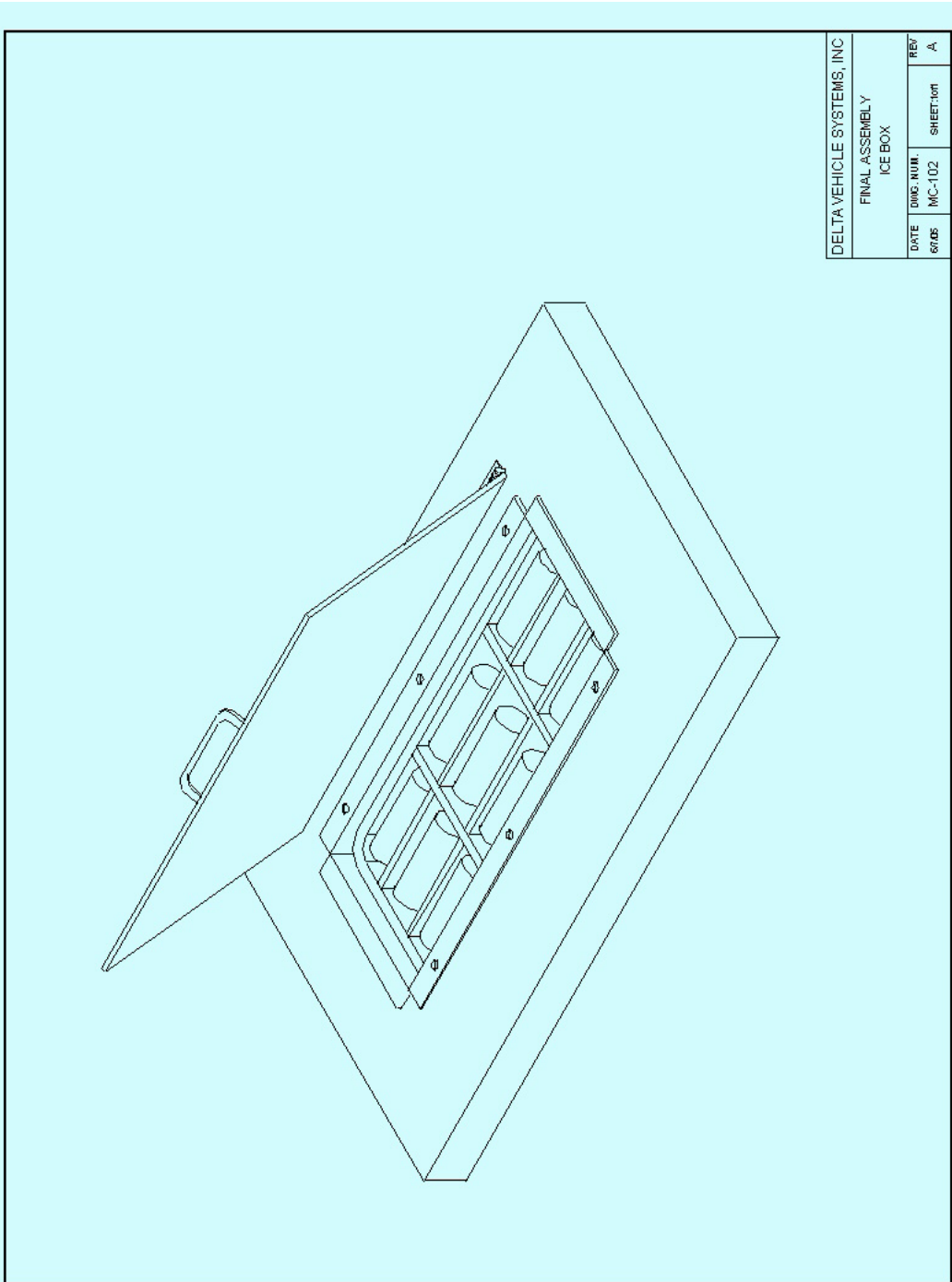
PROVISION OF LOCKING THE CABINET

If your agency is required to lock up medications stored in the ICE-BOX, the aluminum cabinet has 4 slots for the installation of a “cam-lock”, similar to the type used in office furniture. There is a slot for the lock on all 4 sides of the chassis, giving flexibility in installation. You will also need to cut out space in the counter top for the cam to rotate into. Such locks are available in most hardware stores or can be ordered from any hardware supplier. One manufacturer of cam locks can be found at www.americanlocks.com

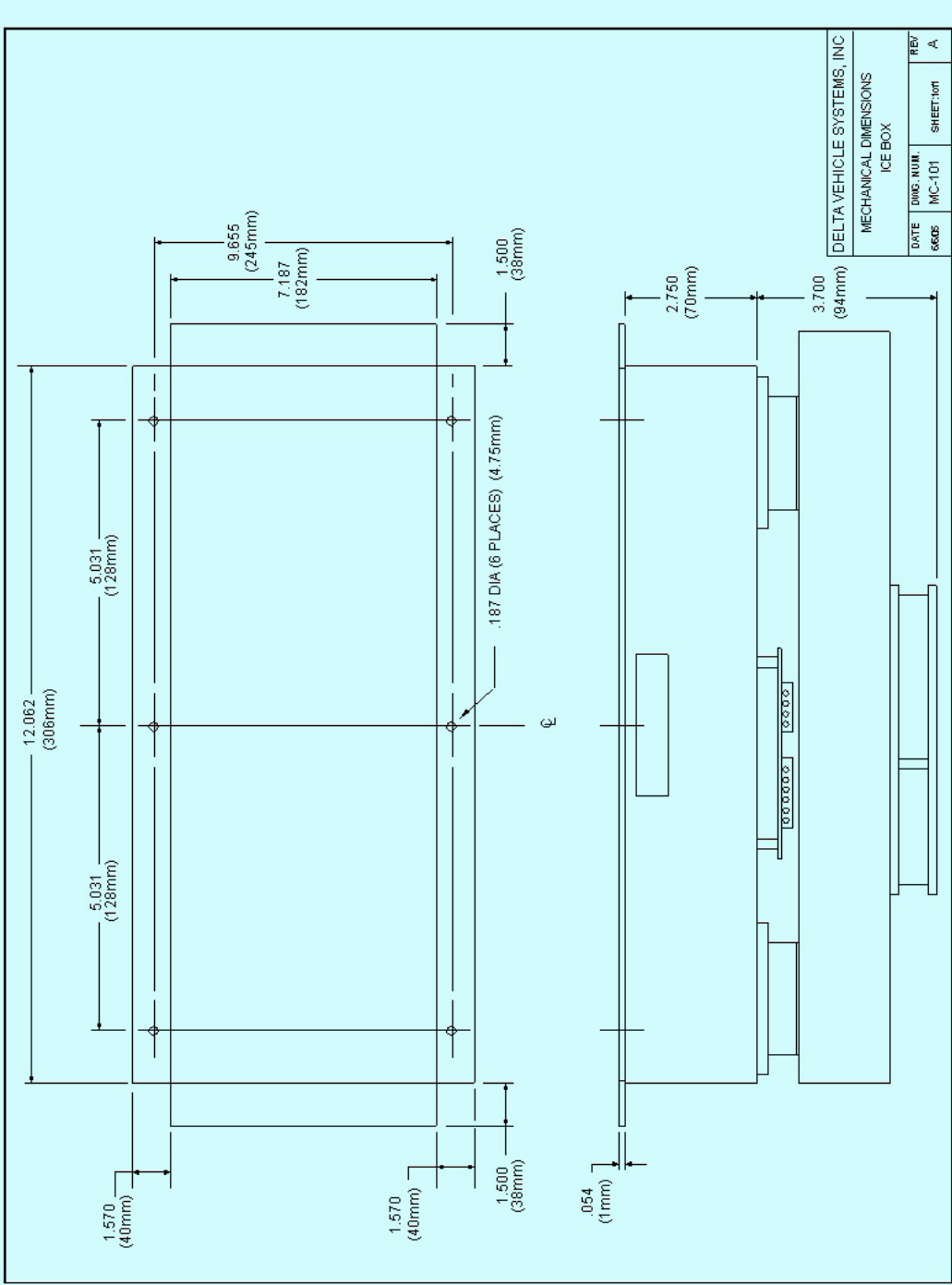
PLASTIC CONTAINER INSERT

To simplify purchasing and future maintenance, the ICE-BOX was designed to use stock plastic storage inserts from the PLANO and FLAMBEAU corporations. The boxes can be acquired in distribution or are readily available in department or sporting good stores. In the event that an insert is lost or damaged, it can be replaced quickly, by the local agency. In addition, a new product is available from the NARCBOX Corporation that is specifically designed for the purpose of storing medication vials.

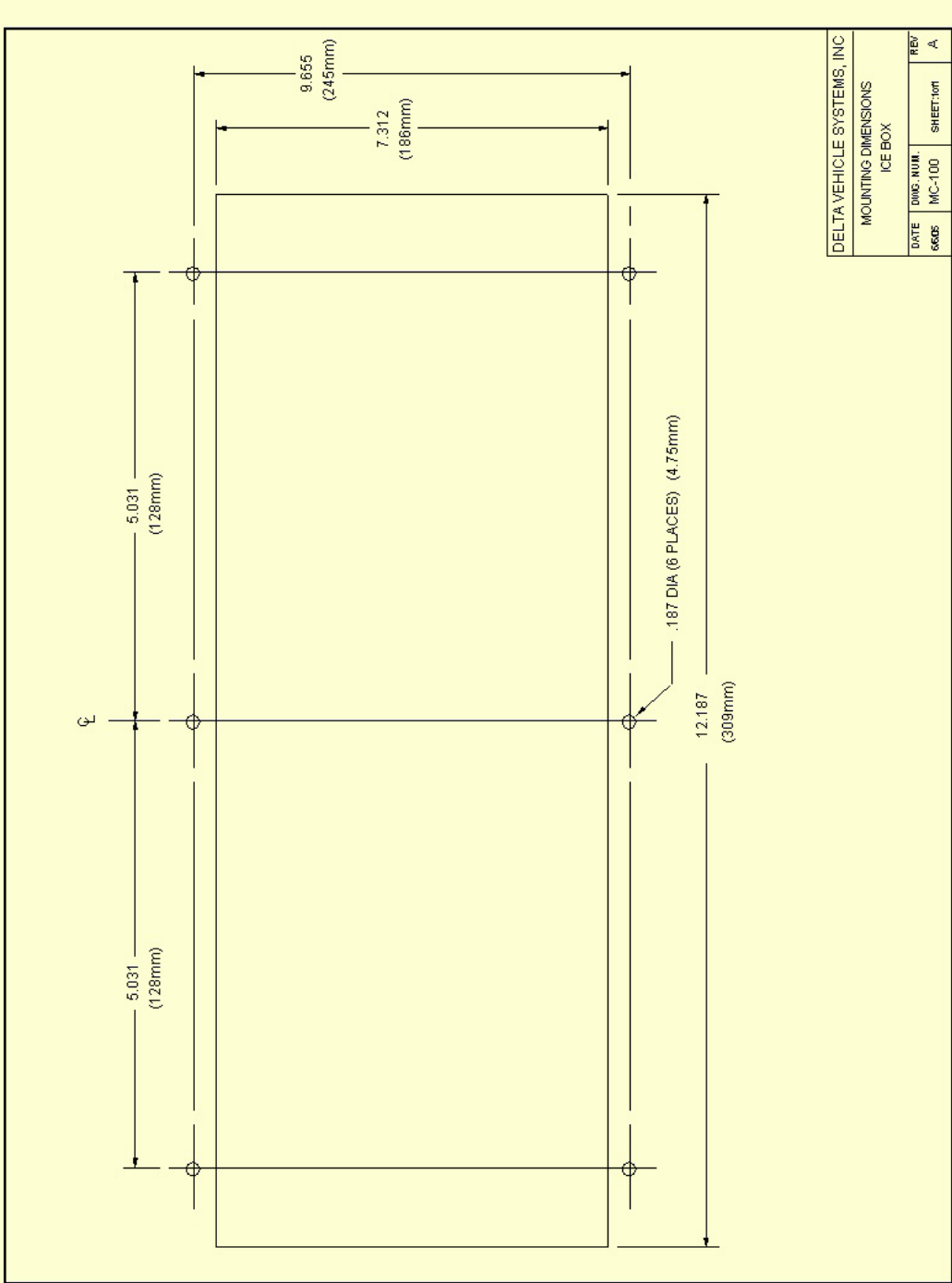
<u>BRAND</u>	<u>SUGGESTED MODEL</u>	<u>WEBSITE</u>
PLANO	MODEL 3500	www.planomoulding.com
FLAUMBEAU	MODEL T3003	www.flambeau.com
NARCBOX	MODEL NB-H	www.narcbox.com
MMF (Steel box w/ lock)	RTP-006404	www.mmfind.com



DELTA VEHICLE SYSTEMS, INC.			
FINAL ASSEMBLY			
ICE BOX			
DATE	DWG. NUM.	REV.	REV.
6/20/05	MC-102	SHEET:001	A



DELTA VEHICLE SYSTEMS, INC			
MECHANICAL DIMENSIONS			
ICE BOX			
DATE	DWG. NUM.	SHEET:TOT	REV.
6605	MC-101		A



TROUBLESHOOTING

The ICE-BOX is a very simple and reliable system. To check that it is working properly, simply place any type of thermometer in various part of the pan. It should be read approximately 35 to 45 degrees F (2 to 7 degrees C) after the unit has had some time to cool. If it is not, make sure there is power going to the PC board, mounted under the pan. If it still doesn't work, remove it from the counter top. Inspect for frayed or broken wires. Also, be sure nothing is interfering with the fan blades. If problems persist, contact DELTA VEHICLE SYSTEMS for assistance.

LIMITED WARRANTY

The ICE-BOX is warranted by DELTA VEHICLE SYSTEMS for a period of 5 years from the date of installation by the ambulance builder. During that period, DELTA VEHICLE SYSTEMS will repair or replace, at its option, any defective parts necessary to return the unit to original operating condition. This warranty excludes any damage caused by fire, accident, abuse or unauthorized repair. No responsibility is assumed for any incidental or consequential damage resulting from the use of this product. Delta Vehicle Systems reserves the right to improve specifications without notice.