

INFORMATION ON MODIFYING FREEZERS FOR MUSEUM PEST CONTROL



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Number 2 August 1993. p.4. by Ann Pinzl.

Freezing is increasingly being recognized as a major part of integrated pest management programs. A temperature of at least -20°C is recommended (with -25°C being best or -4 to -13°F). Acquiring a low-temperature freezer, at a reasonable price, is trickier than it might at first seem. Domestic units (certainly in the US) are not designed to attain and/or hold the required temperatures. Commercial freezers can do the job but are expensive and may be overly large especially for smaller operations.

Upon facing the reality of the freezer market, I had the good fortune at a local appliance dealership to meet two refrigeration service technicians, Mike Klawnsnik and Bart Mosher, who took my problem to heart. I selected a Westinghouse chest freezer (model no. FC083TW) whose external and internal measurements met my needs. However when the lowest temperature setting were used and the temperatures measured, we learned that the temperature ran through a cycle ranging from 0°F through 10°F (-18°C to -12°) throughout a 24 hour period. They were confident that with certain modifications, desired temperatures could be met and maintained.

To that end, they :1) bypassed the cold control by rewiring the power cord directly to the compressor; 2)increased condenser capacity by adding a static condenser coil directly to the discharge line of the compressor and prior to the existing cabinet hi-side coil; 3) added a suction line accumulator to stop liquid refrigerant from returning to the compressor; and 4)added a condenser fan to supply ambient air flow over the compressor and refrigerant lines which are necessary to maintain constant and consistent temperatures within the temperature specifications.

It worked. Within tow hours from the start up, the freezer was operating at -14°F (-26°C). The temperatures levelled off at -18° to -20°F (-28°C to -29°) and maintained these temperatures in ambient air of 40° to 85°F .

Similar modifications should work on other freezers, even older, used models provided they utilize and R-12 system. If there is no appropriate person on staff to perform these alterations, you might check with a local dealership or other refrigeration specialists.

(Editor's note: The modifications cost about \$200, parts and labor. Modifications may void the warranty on the freezer.)

WAAC Newsletter

Volume 16, Number 1, Jan 1994, pp.26-2. by Lisa Mibach

Modifications to Home Freezers for Pest Control

The *SPNHC Newsletter*, Vol. 7., Number 2, August 1993 carries an excellent note by Ann Pinzl on how she was able to achieve -20°F (-29°C) in ambient air of 40 - 85°F , using a Westinghouse chest freezer model No. FC083TW (R-12 system).

Her local refrigeration technicians bypassed the cold control, increased condenser capacity, added a suction line accumulator to stop liquid refrigerant from returning to the compressor, and added a condenser fan to maintain constant and consistent temperatures. Ann Pinzl, Nevada State Museum, Capitol Complex, Carson City, NV 89710-0001 tel (426) 586-5593.

Faced with an infestation emergency, I purchased a GE chest freezer FH22DS, inserted the probe from an indoor/outdoor thermometer (Micronta 63-854, about \$10.95 from Radio Shack) (thanks to Tom Strang of CCI for the idea) and was delighted to find that I achieved temperatures of -32°C . I noticed a small frost pimple on the outside, however, and called 1-800-GE-CARES for advice. They sent a new freezer the next day (!); unhappily, it wouldn't go below -5°F . Since my maverick freezer was now lost in the system, I consulted my local appliance repairman, who explained that freezers are designed to work at -10° to $+10^{\circ}\text{F}$ to prevent freezer burn. When I explained my need for at least -30°C (constant), he cheerfully pulled off the rear control panel, pulled two pins to bypass the thermostat (and explained how to replace them if I needed warrantee service), and opined that I should be able to run the freezer for 3-4 months at a time without damage to it. It stays constant at -35.1°C .