



TropiKool - 40 Marine Refrigerator

TropiKool - 40 Features

- Stirling Cycle, Oil-free Linear-motor compressor
- Low power consumption, less than 18 amp-hours per day @ 12VDC
- Precise temperature control
- Simple installation
 No seawater cooling required
- High reliability
 Greater tolerance to temperature
- Simple maintenance
- Superior performance in high ambient temperature conditions
- Environmentally preferred refrigerants over R-134a: He and CO₂
- Small Multi-Channel high efficiency evaporator
- Small cooling fan: speed varies with heat load to produce low noise levels
- Light weight: less than 25 pounds



Comparison to Conventional Cycle/Holding Plate Unit

	AvXcel	Conventional/Holding Plate ⁽¹⁾
Storage capacity	Not applicable	Same
External size	Similar	Same
Holding plate	None	Yes
Sea water cooling	No	Yes
Nominal current ⁽²⁾	18 amp-hours	21+ amp-hours
Peak current	4A ⁽³⁾	6A
Temperature control	+/-1°F of setting	Varies between thermostat's set points
Initial cool down	Faster	Must cool holding plate first
Allowable tilt	30°	30°
Freezing limit	-50°F	-10°F
Weight	Less than 25 lbs.	36 lbs.
Required electronics	Compressor controller	Compressor controller + monitor for power source and holding plate

(1) Based on literature from a leading manufacturer.

(2) Average current consumption for 12 VDC systems over 24-hour period.

(3) Occurs only at high heat loads, such as during initial cool down.

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AvXcel vs. Conventional Compressors

Higher efficiency

- Linear motors are more efficient because rotor motion does not have to be converted to the linear motion of the piston.
- This type of compressor maintains higher efficiency over a wider temperature range. See the chart to right.
- The motor operates at its optimum speed, regardless of cooling demand. Capacity adjusts by changing the piston stroke length rather than the speed of the motor.
- Oil free compressor improves heat transfer.

No holding plate

Because of its ability to vary capacity while retaining efficiency, the AvXcel system runs continuously responding automatically to demand for cooling. Therefore, there is no need for a holding plate.

No seawater cooling

As previously stated, the compressor maintains efficiency over a wide temperature range. Therefore, the penalty for using ambient air-cooling is much less than with a conventional system.

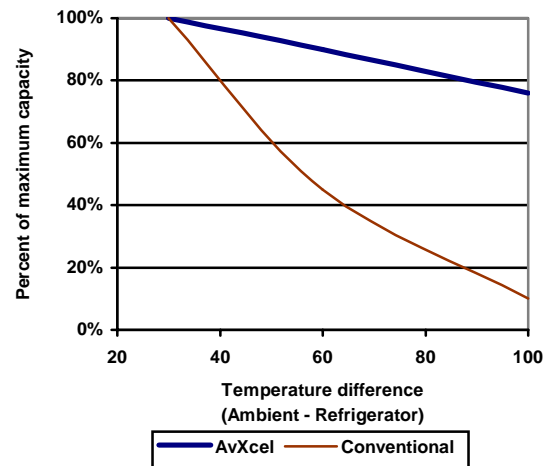
Quieter

- The cooling fan is smaller, because there is less heat to dissipate.
- The fan speed corresponds to the operating conditions. As cooling demand decreases the fan slows. At low demand, the fan may actually stop running.

Improved reliability

- Fewer parts. No crankshaft or piston rod.
- Lower side loads on piston, because of linear motor.
- Piston floats on helium eliminating contact between the piston and cylinder while in operation.
- Superior temperature tolerance.
- No possibility of liquid refrigerant entering the cylinder and damaging the compressor.
- Manufacturing tolerances are less critical to efficient operation.

AvXcel vs. Current Technology



AvXcel Refrigerator Cooling Unit (excluding cooling element)

