

HUSSMANN®

PROTOCHILL

A Cool New Approach to Secondary

*Providing reduced refrigerant charge, better energy efficiency
and lower construction costs*



PROTOCHILL

An Environmentally Friendly Distributed Secondary Solution

Protochill utilizes the Protocol HE platform in conjunction with an integrated pump and heat exchanger package for an innovative medium temp secondary application. This compact distributed system when compared to central secondary systems offers **reduced refrigerant charge, energy savings, lower construction costs and installation flexibility** for a wide range of applications – from new stores to remodels. It's also an excellent fit with low temp Protocol HE systems.

Reduced Refrigerant Charge

A typical water-cooled Protochill can reduce charge up to 60% over a central secondary system, and an air-cooled application can reduce charge up to 35%. See chart below for details.

Estimated Refrigerant Charge for an Optimized Application

Method of Condensing	Distance From Condenser	Refrigerant Charge
Watercooled	N/A	< 40 lb
Air Cooled Microchannel	100 Feet	< 140 lb
Air Cooled Microchannel	50 Feet	< 120 lb

Better Energy Efficiency

Protochill offers up to 10% energy savings versus traditional secondary systems when properly applied. The savings are a result of proper load matching and pressure drop reduction due to the proximity of the units to the refrigerated cases.

Lower Construction Costs

Building construction costs are reduced with Protochill, since it uses the flexibility of Hussmann's Protocol system. No central machine room is required.



Additional Electrical Capacity and Flexibility

Protochill has a flexible electrical panel configuration, reducing the need for additional remote panels. Circuits can be easily added as your load requirements change.

High Efficiency Scrolls

The scroll compressors used in Protochill systems have been specifically designed for energy-saving performance, allowing up to six compressors per system. The design has been optimized to provide improved efficiency at lower condensing temperatures while maintaining performance and capacity during typical conditions. In addition, scrolls provide much less vibration than other compressor technologies, leading to fewer leaks.

Protochill Environmental Advantages vs. Traditional Secondary Systems

- Extremely small overall refrigerant charge (between 30-40 lbs per system for most water cooled applications)
- Significant reduction in greenhouse gas emissions
- Very low refrigerant leak rate (2-5% based on method of condensing)
- Better energy efficiency in virtually all applications (up to 10%)
- Reduced chance of significant refrigerant loss due to smaller charge

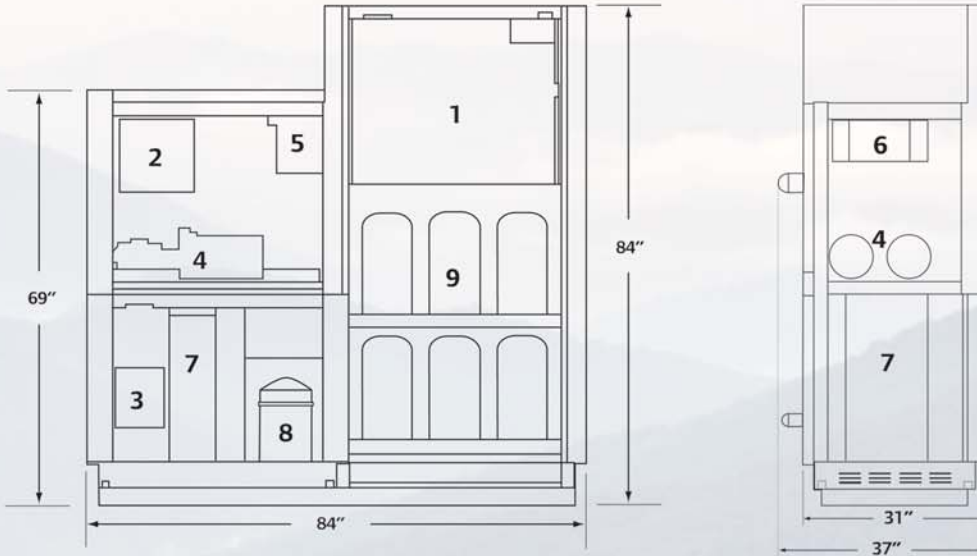
Other Advantages

- Eliminates need for machine room
- Smaller pipe sizes than central secondary systems, simpler installation
- Lower installation costs (Mechanical and Electrical)
- Design flexibility

Other Features

- Multiple pump configuration
 - Standard 2 pumps sized at 50% each
- Air or water cooled condensing options
- Sound attenuated cabinets for quieter operation
- Standard spun end connections
 - Flanges optional
- Factory installed drier & suction filter
- Single point power connection for 208V units
- Easy to service and maintain

Vertical Option

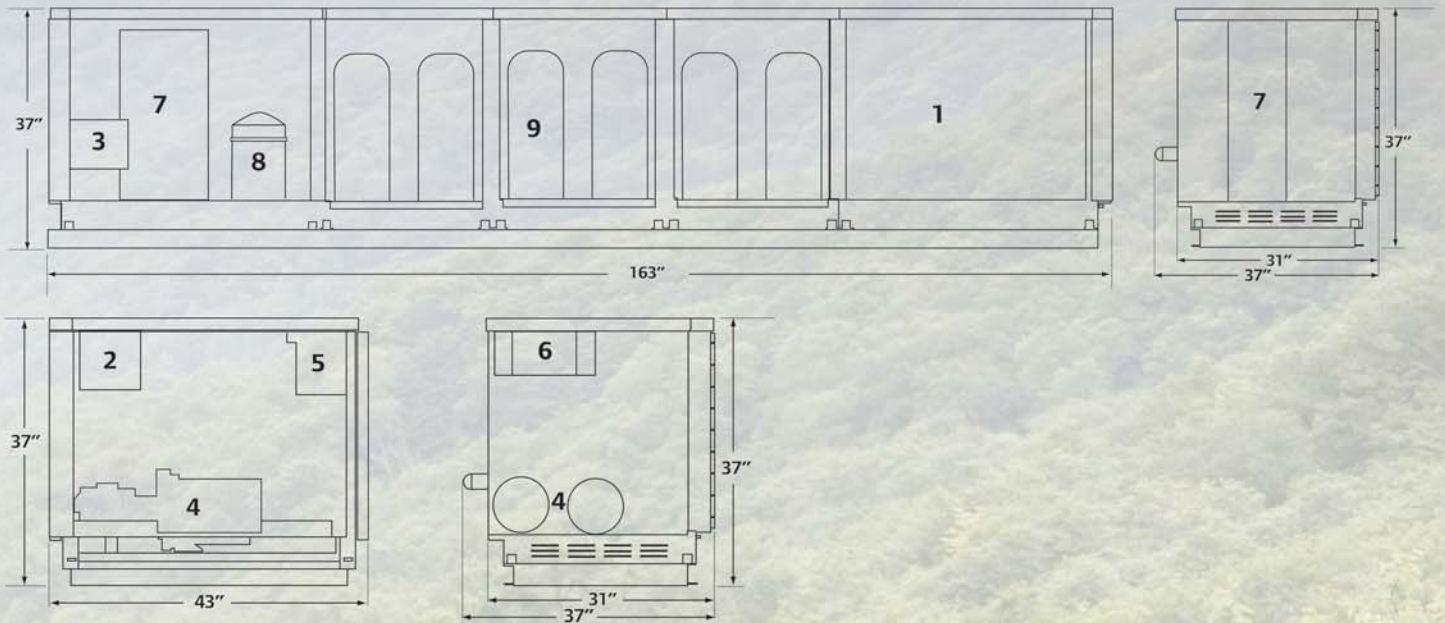


Components

1. Electrical Panel
2. Control Panel
3. Control Panel
4. Pump
5. Fill Tank
6. Expansion Tank
7. Heat Exchanger
8. Suction Accumulator
9. Compressors

*Note: Receiver must be mounted under condenser for the vertical air cooled units

Two-Piece Horizontal Option



*Note: One piece horizontal option is 202" with integral pump station on left

Innovation In Green

Hussmann is committed to developing advanced technologies that help protect the environment by reducing the use of HFCs and improving energy efficiency. This helps clear the air and reduces global warming. Protochill is just one of many green alternatives we offer to help protect our world.

Note: All dimensions are estimates. Consult installation manual for details, available options, spacing and clearance requirements.



Providing equipment and services to manage controlled-temperature environments for food and other perishables, our Climate Control Technologies sector encompasses both transport and stationary refrigeration solutions. Our product brands include Thermo King®, a world leader in transport temperature control systems, and Hussmann®, a manufacturer of refrigeration and food merchandising equipment.

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