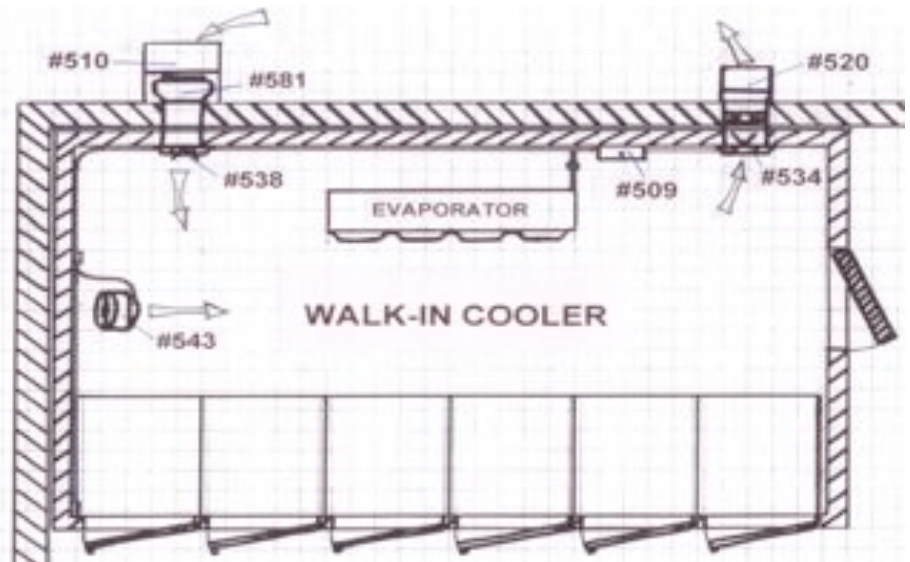A Freeaire Refrigeration system uses several components that integrate with the refrigeration system of a walk-in cooler or freezer. The seven Freeaire components, including a Polar Package for outside air, are shown here installed in a typical walk-in cooler in a cold climate. Other layouts are possible.

Cooler Controller_{tm}, model 2100 (item #13100)

Cooler Controllertm, **model 2100 (item #13100)** The electronic controller uses 24-volt dc power to operate the low voltage coils of relays, each controlling up to 10 amps of 120-240V line voltage load and located at each refrigeration component, including evaporator fans, compressor controls (usually a liquid line solenoid), electric defrost heaters, door heaters, door lights, and outside air intake and exhaust fans.

Features: An LCD screen displaying temperatures, setpoints, and information, 6 blue LED "power on" lights and manual on/off switch that, when switched off, automatically reverts control to a Bypass Thermostat and other controls supplied by others.

Patent Protection: U. S. Patent #5,239,834. and Canadian Patent #2,100,280.

Electrical Enclosure: 16 gauge steel box: 9"H x 8"W x 1.75"D; blue powder coated finish; mounted on wall inside or outside walk-in cooler or outside a walk-in freezer.

Electrical Rating: 24VDC, .08 A. Protected by a 250V, 1A, slow-blow fuse. System is supplied with a 24VDC, 40W, 1.7A, UL-listed switching power supply from Triad Magnetics, model # AWSP40-24 in a 7"x5"x2.5" ABS NEMA enclosure, Hammond Mfg.

Sensors: Digital; Standard: #DS1631A temperature-only sensors from Maxim/Dallas (accuracy: +/-.5°C; operating range: -55°C to 125°C). Optional: #SHT11 humidity and temperature sensors from Sensiron (accuracy: +/- 3% RH,.4°C; Operating range: 0 to 100% RH, -40°C to 123°C). Inside walk-in temperature-only sensor is encased in a pvc container filled with plasticene clay to simulate food. A 2nd sensor senses the evaporator coil temperature to control defrost cycles. A 3rd sensor remotely senses outside air temperature only or temperature and humidity when outside air is used. A 4th sensor measures the humidity near reach-in doors for door heater control. Each sensor has a quick disconnect for a 1, 5, or 10 meter M12 extension cable. Longer distances achieved with M12 patch cables.

Installation: Wiring between components and the Cooler Controller to be 3- and 4-wire cable with 22 AWG wires run in flexible 1/2" blue ENT ("Smurf") tubing.
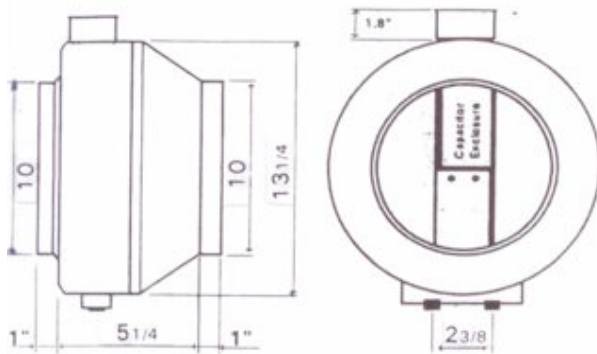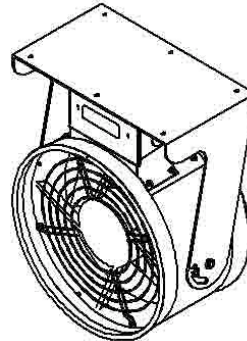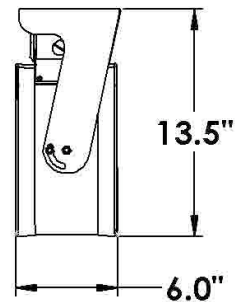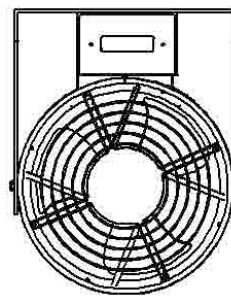
Shipping info: 12"H x 12"W x 6"L, 6 lbs.

Adjustable Circ_{tm}Fan (item #30100)

This can be mounted on the ceiling or wall and can move air vertically, horizontally or diagonally to circulate air however it needs to move to keep the temperature even throughout the space when the evaporator fans are off. Powered by 120VAC, controlled by a 10A RIB relay with a 24VDC coil. **Fan:** 10" diam. x 3.5" axial fan; 665 cfm (free air); 115 volts; 23 watts; 1600 rpm; Dayton brand; polybutylene terephthalate fan blades; aluminum housing; thermally protected PSC motor; UL Component Recognized and CSA Certified; two finger guards. Housing: Galvanized 20 gauge 10.25" diameter x 6" long cylinder swivels inside an 1/8" galvanized steel bracket.
Shipping info: 14"H x 12"W x 6"D, 13 lbs.
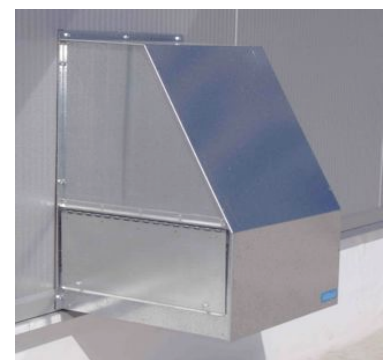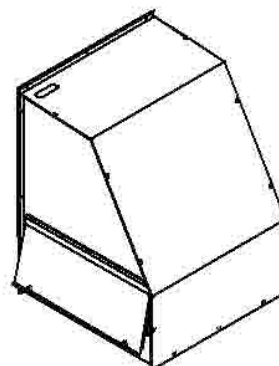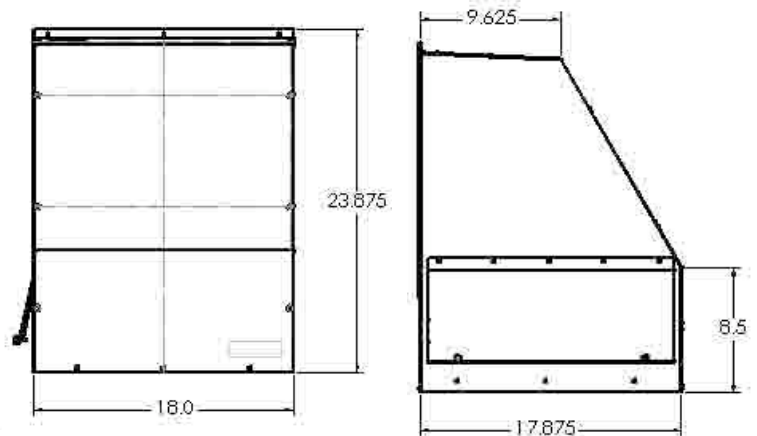
Intake Fan: (item #40100) Fantech

Model FG-10 inline centrifugal fan; 120 volts; 1.43 max amps; 138 watts; permanent split capacitor motor; ebm-papst external rotor motor impeller; 513 cfm (free air); 3000 rpm; UL listed; CSA certified; Energy Star rated; airtight galvanized steel housing; 10" diameter inlet and outlet. 13-3/8" diameter body x 7"H; To be mounted inside the Intake Hood outside the cooled space to prevent condensation and hard-wired to the Intake Damper Housing.
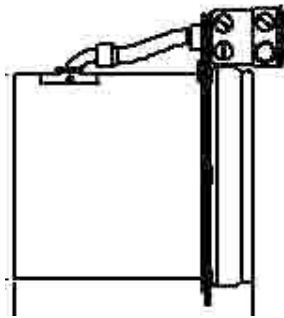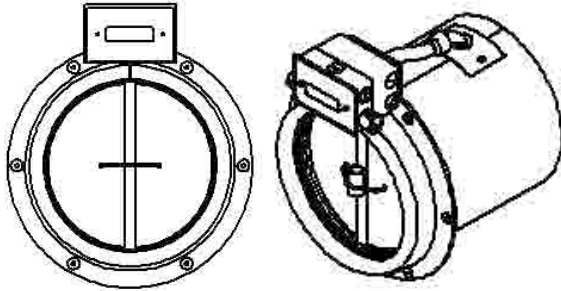**Shipping info:** 12"H x 16"W x 16"L, 12 lbs.

Intake Hood: (item #20100);

20 gauge galvanized sheetmetal housing; a 3/4'' gasketed flange all around for mounting on flat surface; insulated hinged filter access door with two captive screw closures; 1" rigid urethane insulation for heated space mounting. Can be mounted on the roof or wall panel of the walk-in or on a flat wall or ceiling. Important: at least 16" of unobstructed room must be left to the left side of the filter access door for removing and replacing the filter. Double filter track allows two-stage filtration. Shipped with one MERV 8 high capacity pleated filter (item #517) in place. Will also accept optional MERV 7 carbon filter (item#517-C) for further filtration and odor removal of incoming air.
Shipping info: 18"H x 18"W x 24"L, 34 lbs.

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Intake Damper Housing: (item #20400) To

be mounted inside the walk-in cooler in the wall or ceiling. Connected to 120VAC and Intake Fan, which is controlled by a UL-listed 10A RIB relay with a 24VDC coil. Fully insulated and gasketed for minimal air leakage, 10" diameter x 12" x 20 gauge galvanized housing with 13" diameter, cast aluminum mounting ring; insulated aluminum backdraft dampers open with fan pressure; spring-closed. Finger guard attached. Will accept optional summer plug (item #527) for an airtight seal, and an adjustable elbow (item #525)for directional aiming of the incoming air. **Shipping info:** 14"H x 14"W x 8"L, 15 lbs.
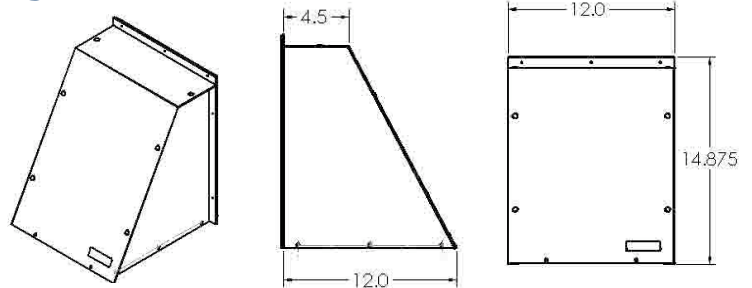
Exhaust Fan Housing: item#20300

To be mounted inside the walk-in cooler in the wall or ceiling. Fully insulated and gasketed for minimal air leakage. Housing: 10" diameter x 12" x 20 gauge galvanized housing with 13" diameter, cast aluminum mounting ring flange; insulated aluminum backdraft dampers open with fan pressure; spring-closed. Will accept optional summer plug (item #527) for an airtight seal.
Fan: 10" diameter x 3.5" axial fan; 665 cfm (free air); 115 volts; 23 watts; 1600 rpm; Dayton brand; polybutylene terephthalate fan blades; aluminum housing; thermally protected PSC motor; UL Component Recognized and CSA Certified; finger guard. Powered by 120VAC, controlled by a UL-listed 10A RIB relay with a 24VDC coil. Fan is mounted so that insulated dampers are between it and the walk-in so that condensation is avoided. **Shipping info:** 14"H x 14"W x 14"L, 18 lbs.

Wallcap: (item #20200): Can be

used for exhaust or intake. 14-7/8"H x 12"W x 12"D, 20 gauge galvanized sheetmetal; 1/4" bird and rodent screen over opening, 10-1/4" diameter opening. **Shipping info:** 10"Hx12"Wx16"L,8 lbs.

Polar Package: Includes 1 Intake Fan (item#40100), 1 Intake Hood (item

#20100), 1 Intake Damper Housing (#20400), 1 Exhaust Fan Housing (#20300) and 1 Wallcap (#20200).   **Shipping info:** 5 boxes, 95 lbs.

Single Relay J-Box: (item #30800): Consists of a single gang

weatherproof electrical box and box extension with a SPDT RIBMN24C relay (from Functional Devices) with a 24VDC coil to control the evaporator fans or door heaters or door lights. 5"L x 3"W x 4"H.   **Shipping info:** 8"H x 6"W x 4"L, 2 lbs.

Double Relay J-Box: (item #30900): Consists of a double gang

weatherproof electrical box and box extension with a DPDT RIBMU2C relay (from Functional Devices) with 24VDC coils to control the compressor control and bypass thermostat or door heaters and door lights. 5"L x 5"W x 4"H.   **Shipping info:** 8"H x 6"W x 4"L, 3 lbs.

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