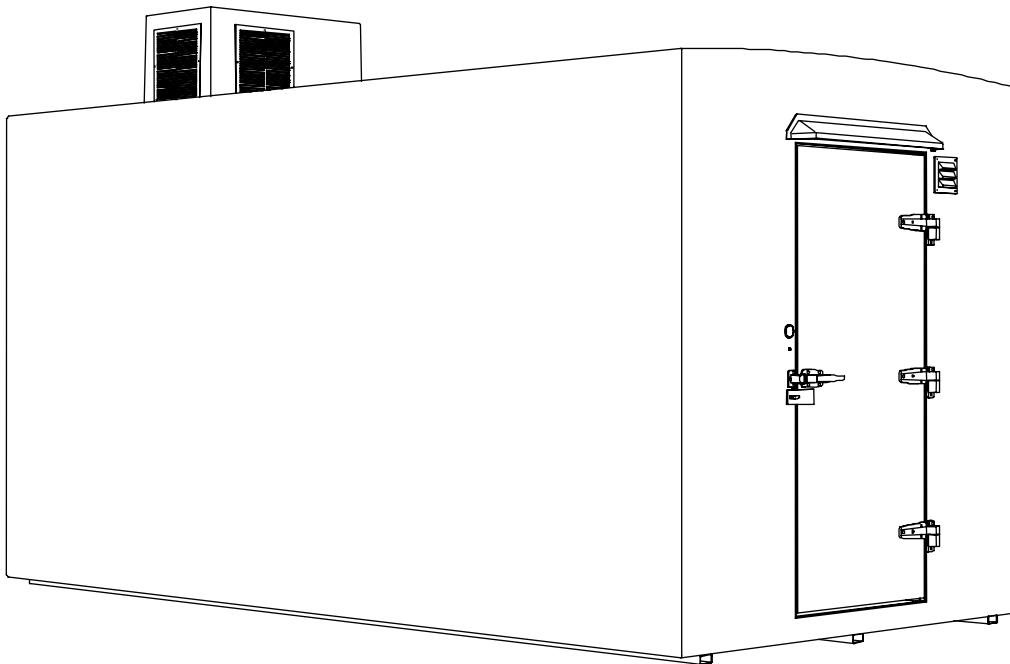




INSTALLATION & SERVICE MANUAL



ONE PIECE OUTSIDE WALK-IN COOLERS – FREEZERS

Polar King[®] International, Inc.

SERVICE

4424 New Haven Avenue
Fort Wayne, Indiana 46803
In Indiana – 260-428-2530
Toll Free – 1-800-223-2017
Fax – 260-428-2533

SALES

4424 New Haven Avenue
Fort Wayne, Indiana 46803
In Indiana – 260-428-2530
Toll Free – 1-800-752-7178
Fax – 260-428-2533



To Our Customers:

Thank you for purchasing a Polar King[®] walk-in to fill your refrigerated storage requirements.

Your walk-in has been designed and engineered to provide years of trouble-free service. All Polar King[®] walk-ins are factory constructed using space-age materials and state-of-the art manufacturing techniques. Every unit receives numerous quality inspections and is pre-tested prior to delivery. The finished product is the best and most efficient walk-in available on the market.

However, should you experience a service problem, please contact our customer service department. They will work with you on resolving the problem and insure your continued satisfaction.

Again, thank you for selecting a Polar King[®]. Should you require future refrigerated storage, we would appreciate the opportunity to serve you.

Polar King[®] International, Inc.

Be sure to register your new Polar King[®] walk-in online at:

www.polarking.com

Name _____

Phone Number _____

Address _____

Email address _____

City _____

Model Number _____

State/Province _____

Serial Number _____

Zip / Postal Code _____

Purchase Date (mm/dd/yyyy) _____

Country _____

Purchase Location _____

We do not sell, rent or otherwise distribute your private information to any third party. Please see our Privacy Policy for more information.

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A General Unit Information Sheet is included with this manual for your convenience. This sheet contains detailed information on your walk-in. Please have this information available when requesting service.

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REFRIGERATION BASICS

Modern refrigeration has many applications. The first, and probably the most important, is the preservation of food because most foods kept at room temperature spoil rapidly. However, when kept cold most foods will keep much longer.

Before looking at the operation of mechanical refrigeration, it is important to understand the physical and thermal properties of the mechanisms and substances used to extract heat. Removing heat from the inside of the walk-in is somewhat like removing water from a leaking boat. A sponge may be used to soak up the water and then held over the side, squeezed, and the water released overboard. The operation may be repeated as often as necessary to transfer the water from the boat back into the lake.

In a walk-in, heat instead of water is transferred. Inside the walk-in heat is absorbed by the liquid refrigerant in the evaporator as the refrigerant changes from a liquid to a vapor. After the refrigerant has absorbed heat and turned it into a vapor, it is pumped into the condensing unit located outside the refrigerated space and then compressed. The heat is “squeezed” out by high temperature and then cooled in the condenser. This cycle repeats until the desired temperature is obtained.

Cold is a relative term used to describe low temperature, it is not something that is produced. Rather, the removal of heat results in a condition termed “cold”. A refrigerator produces a condition called “cold” by removing heat from inside the refrigerator and the stored content within it. You have probably felt the heat on the floor as you walked by your refrigerator in your home. The principle of heat removal is the same for your walk-in cooler and/or freezer.

The fact that bacteria are present in most foods calls for it to be preserved in some fashion. Exposing the food to cold or low temperatures slows the growth of these bacteria preventing foods from spoiling as quickly. A cooler temperature slows the activity of all organisms, thus the growth of bacteria on refrigerated food slows dramatically.

The spoiling of food is actually the growth of bacteria. If the bacteria can be kept from increasing, the food will remain edible for a longer period of time. Since most foods contain a considerable amount of water, the food must be kept slightly above freezing temperatures.

If food is frozen slowly, at or near the freezing point of water, large ice crystals will form and break down the food tissues. When such food defrosts, it spoils rapidly and the taste and appearance of the food is greatly compromised. To prevent this problem fast freezing at temperatures between 0°F and -15°F is recommended. By using these low temperatures small crystals form which do not injure the food tissues.

It is always important to keep in mind the difference between refrigerating and freezing. Further, the standard walk-in cooler is designed to maintain the temperature of the product at 35°F, providing the temperature of the product is within 10°F of this temperature. If the product to be maintained is continually at a higher temperature, additional refrigeration system capacity will probably be required. The same parameters hold true for freezers.

To insure you have adequate refrigeration capacity, be sure to provide your sales consultant with as much information as possible about how you intend to use your cooler and/or freezer.

HEAT LOAD

As we mentioned earlier, the refrigeration system on your walk-in does not make things cold. The system instead removes heat from the walk-in structure. Where does the heat come from that must be removed by the refrigeration process? The two most common sources you can control are door openings and product load. Did you know that one 100-watt lamp left on in a walk-in would generate 8,208 BTU in a 24-hour period? Keep door openings and closings to a minimum to conserve energy. When working inside the walk-in, close the door behind you. No need to worry, as there is a door opener inside.

PRODUCT LOAD

The main heat source in your walk-in is the amount of heat that must be removed from the stored product. For example, if you load your walk-in with 1500 pounds of product at 0°F, very little heat will have to be removed to obtain a temperature of -10°F. If the same 1500 pounds of product is delivered from your supplier at +25°F, you must pay to run the refrigeration system to remove this heat from each and every pound of product, until the satisfactory temperature of -10°F is reached. You will have smaller utility bills if you let your supplier remove heat from the product, rather than doing it yourself.

Remember, your unit is designed as either a holding unit (little or no product load) or has been designed to compensate for known product load. It is important to tell your sales consultant how you intend to use your unit. If significant product load occurs in a unit designed for holding, serious temperature problems may occur.

LOADING YOUR WALK-IN

Always move product into your walk-in as soon as you receive it. The longer you wait the more heat it will absorb and the more you will pay to operate the walk-in. As you load your walk-in, be sure to allow plenty of airflow around the product because good airflow decreases the amount of time needed to remove heat. Be sure to allow adequate room around the evaporator. As well, never have a product closer than 12 to 16 inches from the evaporator. Remember, the evaporator is hot during defrost and can thaw a product that is too close.

BASIC STRUCTURE

The structure of your walk-in is manufactured at our factory in Fort Wayne, Indiana. Four-inch, or optional six-inch, two-pound density foam insulation (the most efficient insulation available) is used in the walls, floor, and ceiling of the unit. The base of the unit has a built-in steel frame providing tremendous strength and allows for easy movement or total portability should your needs require this flexibility.

The unit is completely encased in fiberglass...one continuous surface... which means no seams, no rivet holes, and no air leaks. Unlike other outdoor units, you will never have to caulk splits or metal tears in your Polar King® walk-in. No protective roofs or enclosures are required. You won't pay to "cool the outside" with a Polar King® unit. All the cold air stays in the unit where it belongs. This equates to big dollar savings for you.

REFRIGERATION

Copeland Condensing Units and Larkin Evaporators are used to give you one of the finest refrigeration systems available. Every system is engineered to provide maximum operating efficiency and years of trouble-free operation. All units are adjusted to the customer's temperature requirements. Trained technicians test and monitor the performance of each unit for 24 hours prior to it leaving our factory.

THROUGH-WALL INSTALLATION

Polar King® walk-ins are designed for exterior installation. Units are delivered ready to run as "free standing" units. However, many customers use walk-through installation. This provides the same convenience as an inside installation without taking up valuable and costly interior floor space.

Drawings are provided that detail slab elevations, dimensions for walk-through opening, and the flashing detail.

Should you have any questions on a walk-through installation, please feel free to contact our sales or engineering departments.

INSTALLATION INSTRUCTIONS

Polar King® walk-in coolers and/or freezers are delivered to our customers fully assembled and require only a few basic procedures prior to start-up.

DO'S

1. Provide a level slab as required by your local building code. It is very important that the surface is level for proper drainage and operation. See Section 3 "Technical Information" for walk-through applications where walk-in unit is to be attached to the building.
2. Condensing unit on the top (or back) of the walk-in should be a minimum of 6 feet from any building intake or exhaust ventilation fans.
3. Keep an open area of at least 3 feet around condensing unit to assure that sufficient air ventilates across the compressor.
4. Make sure you have adequate electrical service for your particular unit.
5. Once walk-in is in place, a qualified electrician in accordance with the NEC and/or local electrical codes may then wire it. A wiring diagram is located on the back of the electrical box panel on the condensing unit.
6. Loosen compressor-mounting bolts (if supplied).
7. Set the correct time of day on the defrost timer. This is necessary in order for the preset defrost to occur at the desired times.

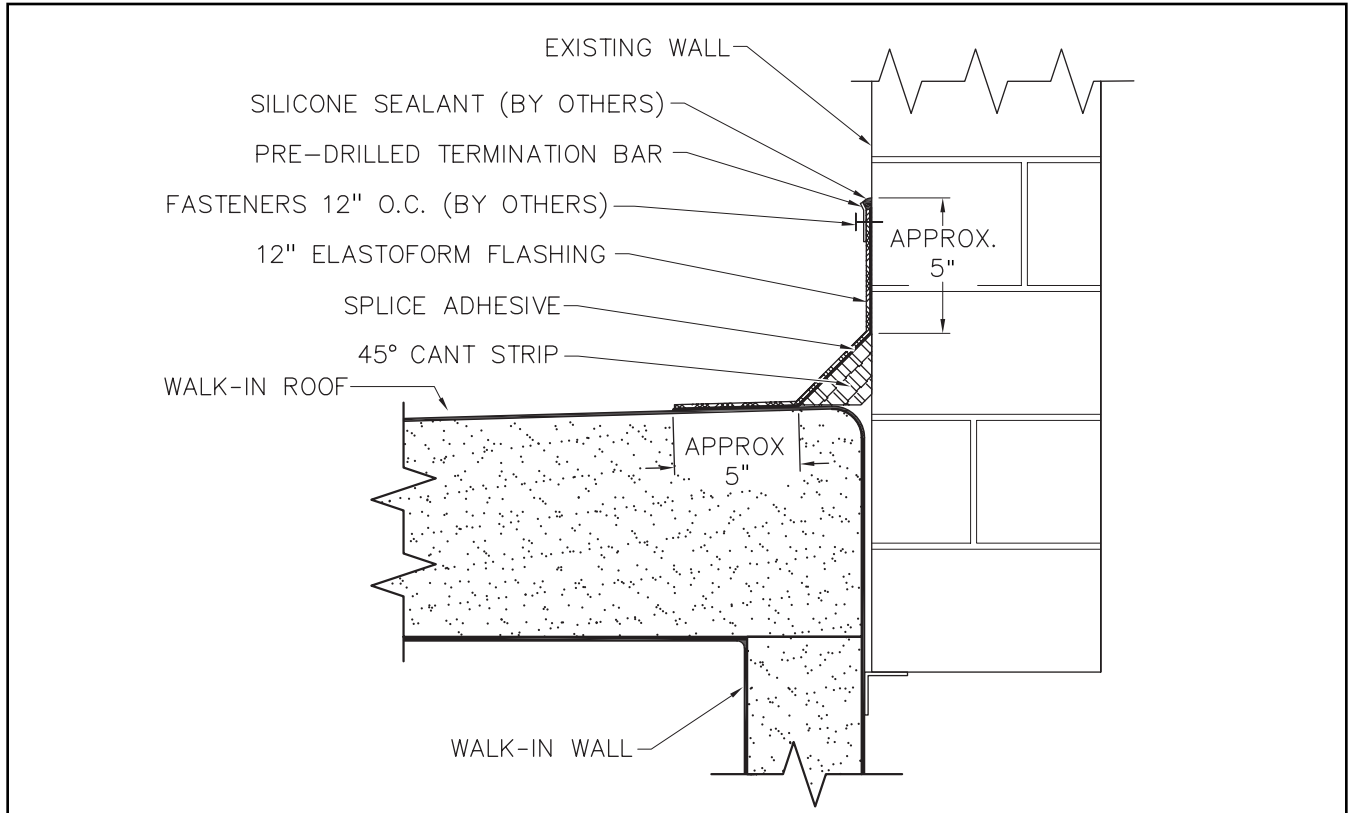
8. If unit is delivered or sits idle in winter months, an external heat source should be applied to the compressor crankcase for 12 to 24 hours prior to start-up.
9. The unit is now ready for operation. (See sequence of operation.)
10. Units are preset at the factory to automatically include four defrost cycles for a duration of 30 minutes each. Preset defrost cycles may be changed to accommodate different applications.

DON'TS

1. Do not physically alter any controls, switches, wires or any device carrying an electrical current, without disconnecting power to the walk-in cooler and/or freezer.
2. The box temperature is preset at the factory to customer request. Temperature selection should not be adjusted up or down. If a different temperature is required, contact Polar King® for proper procedure on changing the preset temperature.
3. When cleaning the inside of the unit with any liquid substance, turn off electrical power.
IMPORTANT: DO NOT USE BLEACH OR AMMONIA TO CLEAN INSIDE OF UNIT AS IT MAY CAUSE DAMAGE TO COIL SURFACE.
4. **IMPORTANT: DO NOT DISCONNECT MAIN POWER SUPPLY WHILE COMPRESSOR IS RUNNING. DAMAGE MAY OCCUR IF COMPRESSOR IS NOT ALLOWED TO PUMP DOWN.**

ROOF FLASHING INSTALLATION

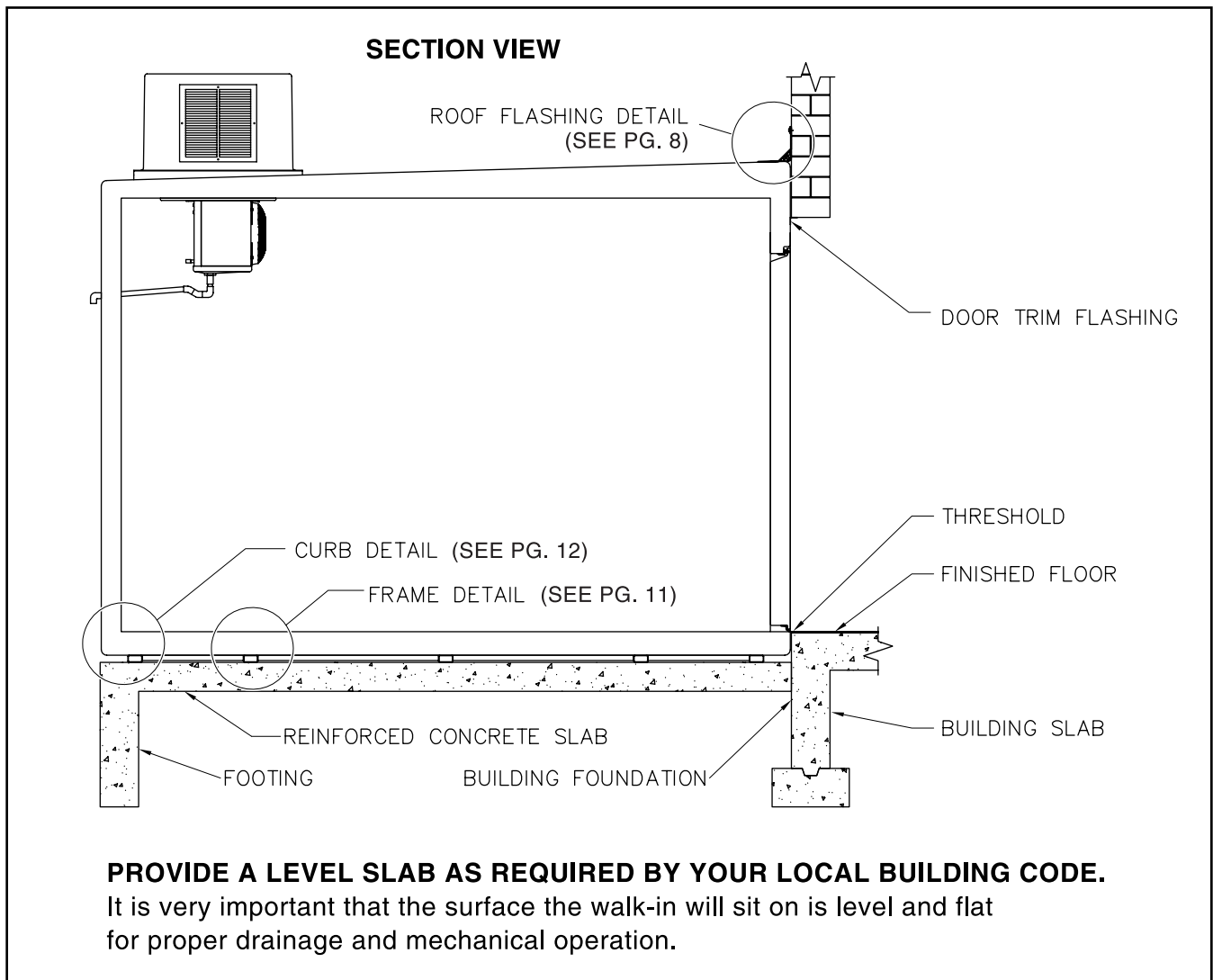
1. Read instructions thoroughly before starting. Take inventory of necessary materials. Items provided by Polar King® includes:
 - a. Elastoform flashing (12" wide rubber material). (The front side has a plastic film covering that can be removed after installation and the back side is uncovered.)
 - b. 45° cant strip (fillet strip).
 - c. Splice adhesive (Firestone SA-1065 or equivalent).
 - d. Pre-drilled aluminum termination bar.
2. Additional items needed:
 - a. Mechanical fasteners (screws or other type of fastener) for termination bar.
 - b. Silicone sealant.
3. See Flashing Detail for approximate placement of materials.
4. Be sure roof of walk-in is free of dust and dirt to a distance of 12" from building.
5. Place cant strips against building as shown on detail.
6. Apply a coat of splice adhesive that is approximately 5" wide to the roof of your walk-in and the wall of your building.
7. Apply a coat of splice adhesive to back side of elastoform flashing. Allow adhesive to set long enough to get tacky.
8. Place flashing face up onto the coated area of the roof and wall, while keeping it centered on the cant strip.
9. Apply pressure to the flashing to be sure that there is a good bond against the roof and the wall. At this point the film cover on the front side can be removed.
10. Install supplied termination bar over top edge of elastoform flashing. Fasten approximately 12" on center. (Fasteners are not included.)
11. Apply bead of silicone sealant (not provided by Polar King®) to top of termination bar to finish installation. The completed flashing assembly can be painted if desired.



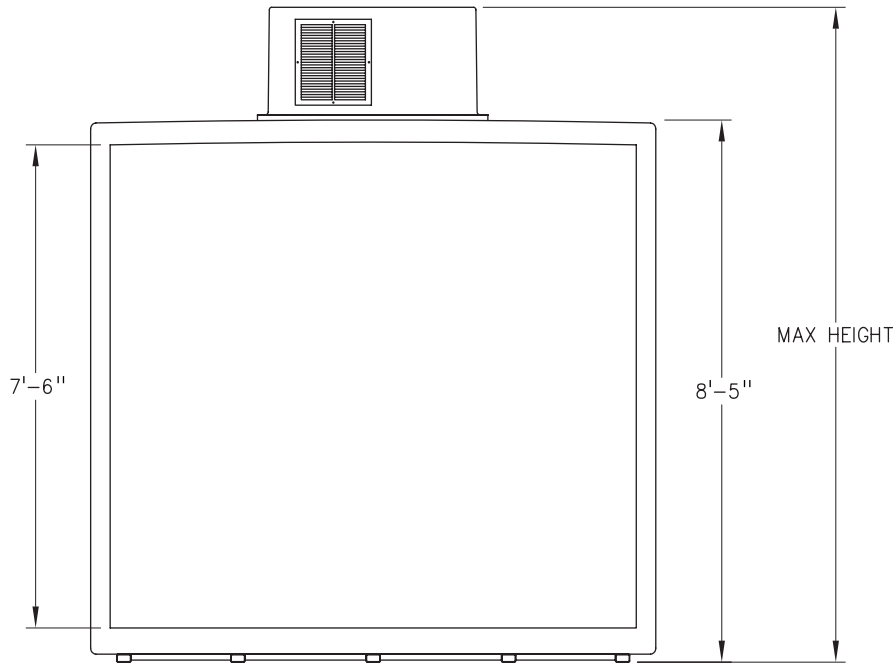
Roof Flashing Detail

SIDEWALL FLASHING INSTALLATION

1. Read instructions thoroughly before starting. Take inventory of necessary materials. Items provided by Polar King® includes:
 - a. PVC flashing (1" x 5" L-shape PVC material).
2. Additional items needed:
 - a. Mechanical fasteners (screws or rivets).
 - b. Construction adhesive.
 - c. Silicone sealant.
3. Align PVC flashing against building and walk-in and trim for proper fit. Flashing may be applied with short leg sticking out or in.
4. Flashing can be attached to walk-in using any heavy-duty construction adhesive.
5. Use sheet metal screws to hold in place until adhesive sets.
6. Apply bead of silicone sealant to finish installation.



Through Wall Details

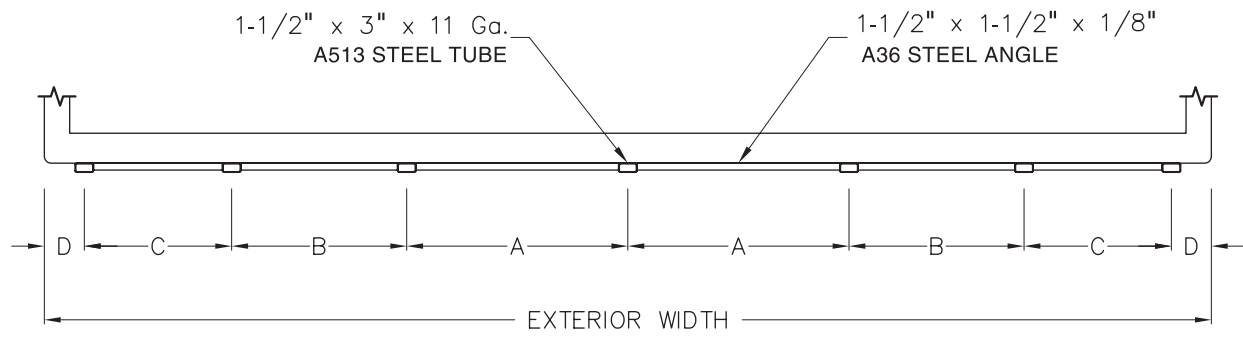


COMPRESSOR SIZE	MAX HEIGHT
3/4 & 1 HP	10'-3"
1 1/2 & 2 HP	10'-5"
3 HP & UP	11'-4"

STANDARD HEIGHT FREESTANDING UNIT

NOTE: The height may be adjusted to meet site conditions.
 The interior height can be any dimension from 6'-6" to 10'-2".
 Exterior height is determined by adding 11" to the interior height.
 Contact Polar King® for applications requiring sloped roofs.

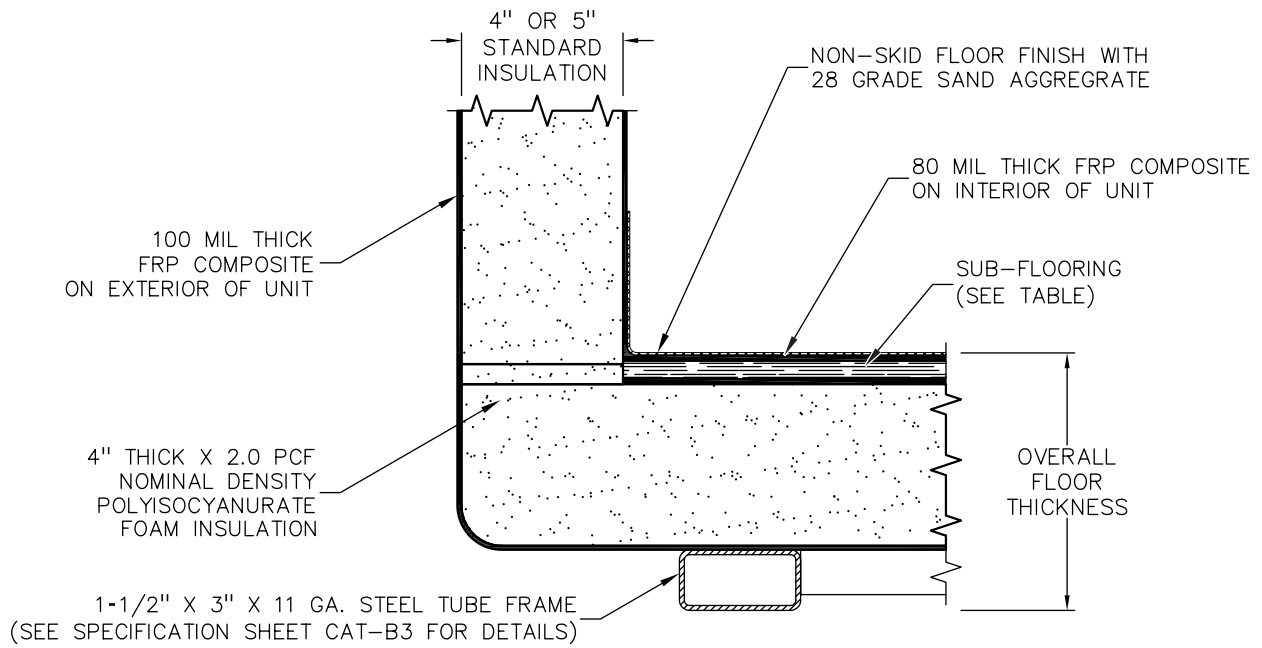
Height Details



END ELEVATION VIEW

Frame Spacing					
Exterior Width	Number of Tubes	A	B	C	D
5'-11"	3	28-1/2"	-	-	7"
6'-11"	3	34-1/2"	-	-	7"
7'-11"	3	40-1/2"	-	-	7"
8'-11"	3	46-1/2"	-	-	7"
9'-11"	5	28-1/2"	24"	-	7"
10'-11"	5	34-1/2"	24"	-	7"
11'-11"	5	40-1/2"	24"	-	7"
12'-11"	5	36"	34-1/2"	-	7"
13'-11"	5	40-1/2"	36"	-	7"
14'-11"	5	36"	46-1/2"	-	7"
15'-10"	7	36"	28-1/2"	24"	6-1/2"

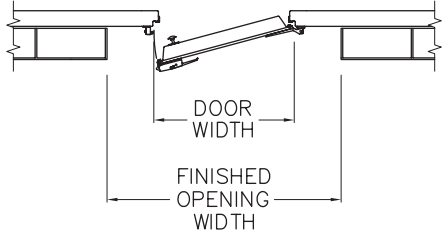
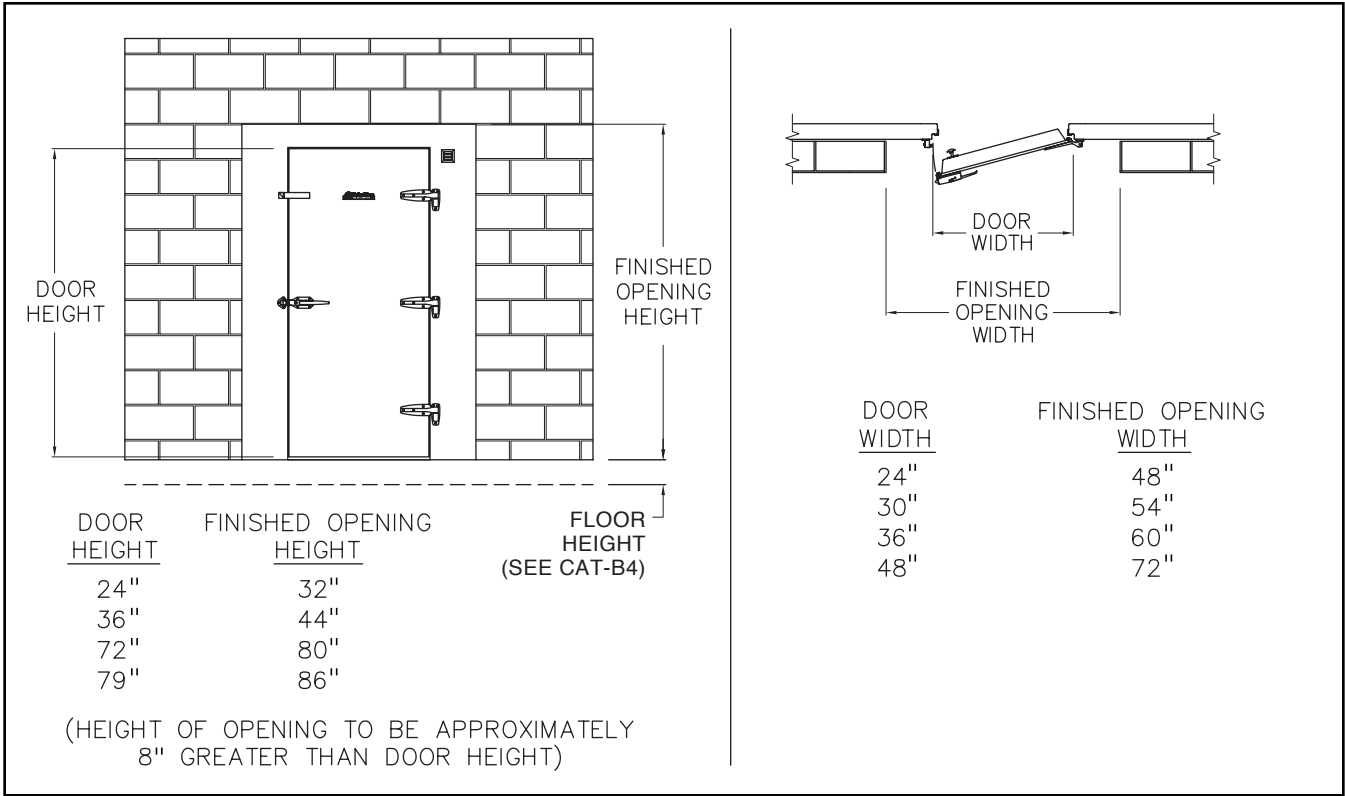
Frame Details



FLOOR TYPE	FLOOR THICKNESS	
	OVERALL THICKNESS	SUBFLOOR THICKNESS
HEAVY DUTY	6 - 3/8"	1/2"
EXTRA HEAVY DUTY	6 - 5/8"	3/4"
PALLET JACK FLOOR	7 - 1/8"	1 - 1/4"

100 MIL EXTERIOR OR 80 MIL INTERIOR REINFORCED FIBERGLASS CONSISTING OF: FIBERGLASS SPRAY GUN ROVING (207 YARDS PER POUND YIELD) IN GENERAL PURPOSE POLYESTER RESIN AT 33%-34% GLASS CONTENT WITH NO FILLER.

Curb Details



<u>DOOR WIDTH</u>	<u>FINISHED OPENING WIDTH</u>
24"	48"
30"	54"
36"	60"
48"	72"

Door Opening Details

ARCHITECTURAL / ENGINEERING SPECIFICATIONS

The following specifications are designed for use as a guide to Architectural, Engineering, and Food Service Consultant specification writers, on projects utilizing outdoor walk-in refrigeration equipment. Where items appear in brackets [] a selection of one of the alternatives is required by the specifier. Due to our policy of ongoing product improvement, Polar King® International reserves the right to change specifications without notice.

GENERAL

The equipment provided shall be factory prefabricated and have unitized design. The equipment will allow installation without assembly and relocation without disassembly. The equipment shall require an on-site contractor, responsible for pouring of concrete pad, connection of electrical power supply to each refrigeration system, and for flashing of unit to building wall (if required). Walk-in shall be Polar King® (Polar King® International, Inc., Fort Wayne, Indiana) Model No. _____.

The walk-in shall bear the label of the following National Certification Agencies:

- A. National Sanitation Foundation (NSF STD #7)
- B. Underwriters Laboratory (Major Refrigeration Components)
- C. Underwriters Laboratory (Major Electrical Components)
- D. Underwriters Laboratory (Class I Urethane)

The walk-in shall comply with the following model building codes:

- A. National Electric Code (NEC)
- B. International Building Code (IBC)

SIZE AND CAPACITY

The walk-in shall be built to specified interior and exterior dimensions, as shown on the plans and drawings.

The walk-in shall have sufficient refrigeration to maintain **[+35°F] [0°F] [-10°F] [-20°F]** temperature inside the **[cooler] [freezer]** compartment when the ambient temperature is 100°F, the average number of door openings is **[1] [2] [3] [4] [10]** per hour, and there is **[no] [_____ BTUH]** load from warm products entering unit. The refrigeration system shall be wired to run on **[208V/60HZ/1PH] [230V/60HZ/1PH] [208-230V/60HZ/3PH] power.**

STRUCTURE

The walk-in structure shall be constructed with a fiberglass interior and exterior and no less than a 4" urethane core. The interior and exterior fiberglass shell shall be completely seamless and will form a one-piece structure. The exterior shall be rust, dent and scratch resistant. The exterior shall be coated with an industrial enamel finish.

Partition walls shall be constructed in the same manner as the exterior walls with no less than a 4" urethane core.

FLOOR

A 4" insulated (R-28) prefabricated floor shall be supplied. The floor shall be reinforced with woven fiberglass matting on top of a 1/2" plywood sub floor bonded to the urethane core forming a watertight seal. A skid resistant surface coating will be applied to the floor surface. The floor shall be constructed for permanent elevation 1-1/2" above grade. The elevation provides for air circulation under the floor to eliminate corrosion and the need for an insulated and/or ventilated slab. A welded, heavy-duty steel frame shall be encased in fiberglass and permanently bonded to the floor to ensure total portability without damage to the walk-in. The floor shall have the capacity to support 900 lbs./sq.ft. of evenly distributed load.

INSULATION

All insulation must be rigid, unfaced, closed cell polyisocyanurate foam chemically bonded to the interior and exterior fiberglass to form a one-piece structure. Standard insulation thickness shall be 4" for coolers and 5" for freezers.

The thermal conductivity (K) shall not exceed .165 (BTU's/in/sq. ft./hr. F). The thermal resistance (R) factor shall not be less than 25 for coolers or 32 for freezers.

The insulation shall be U.L. Class I having a flame spread of less than 25, fuel contributed of 0, and smoke developed of less than 185.

LIGHTING

Unit must be complete with **[incandescent]** **[fluorescent]** light fixtures factory installed and tested for proper operation prior to shipment. A **[100 watt incandescent bulb]** shall be used for each 50 sq. ft. of interior floor space and controlled by either a motion sensor in combination with a wall switch or a timer-operated wall switch. A **[23-watt compact fluorescent bulb]** shall be used for each 50 sq. ft. of interior floor space and controlled by a wall switch. A **[four foot, two bulb fluorescent fixture]** shall be used for each 100 sq. ft. of interior floor space and controlled by a wall switch. Lights shall be contained in a vapor-proof fixture.

DOORS

Doors are constructed in the same manner as the walls with no less than 4 inches of foam insulation.

All doors opening into a controlled temperature room shall be supplied with doorframe heaters, which shall supply sufficient heat to prevent condensation or frost accumulation.

Doors shall be provided with a magnetic gasket around the perimeter. Flush bottom doors shall be provided with adjustable vinyl sweep gasket. When door is closed, it shall form a positive airtight seal. Door gasket shall be installed in retainer strips for easy replacement in the field.

Doors are equipped with three heavy-duty door hinges. They shall be cam lift type, self-closing, with nylon bearings and door lift-off capability. Hardware shall be chrome finish.

Doors shall incorporate a positive snap action latch with adjustable strike. The latch shall be equipped with cylinder lock and OSHA approved inside safety release mechanism to prevent entrapment. The hardware shall be chrome finished and mounted with stainless steel tamper-proof screws.

Doors are equipped with vinyl strip door, vinyl swing doors or spring assisted hinges.

Doors are equipped with automatic hydraulic cylinder type door closer.

Doors shall be hinged as shown on the drawings.

The following doors are required in the location as shown on the plans and drawings.

Standard Entry Doors	Optional Entry Doors	Product Loading Doors	Service Doors
A. 30" x 79"	A. 48" x 79"	A. 24" x 24"	A. 36" x 80"
B. 36" x 79"	B. 54" x 79"	B. 24" x 30"	B. 36" x 84"
	C. 60" x 79"	C. 30" x 30"	C. 42" x 84"
			D. 48" x 84"

Entry door jamb shall include a vapor-proof switch and visible pilot light to indicate when lights are in the ON position.

THERMOMETER

Entry door shall be supplied with 2", flush face dial-type thermometer. Thermometer shall be NSF approved.

HASP LOCK

All entry doors not specified as thru-wall or partition type doors shall be equipped with a door hasp lock to prevent unauthorized entry into the walk-in. The hasp lock shall be supplied with an inside safety release mechanism.

