holdover plates

Features

True Eutectic Solution

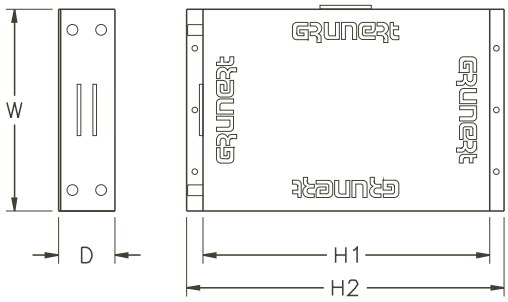
- Specially formulated mixture of water, salts and inhibitors.
- Provides stable box temperatures throughout holdover period.
- Injected into plates under a vacuum (30 microns).
- Four temperature ranges available: 0°F (-18°C), -9°F (-23°C), and -18°F (-28°C) for freezer applications and 26°F (-3°C) for refrigerator applications.

Unique Stainless Steel Construction

- Hand polished #304 stainless steel (.062) for clean, aesthetic appearance.
- Easy mount flange system on short side of all plates.
- Internally gussetted steel tubing improves thermal transfer and is high pressure tested to 550 psi.
- Hand welded seams by certified TIG welders.
- Wide variety of sizes and ranges to accommodate various box designs.

Dual Circuit Design

- Permits paralleled operation for engine drive and AC or DC voltage condensing units for redundancy.
- Retrofit crossover assembly for easy conversion to single unit.
- Rapid “pull down” of plate temperature when run with a double pass on one condensing unit.
- Dual set of thermostat sensing wells for accurate temperature control.



Specifications

Plate Selection [1]	12 x 10	16 x 10	20 x 8	20 x 10	16 x 14	24 x 10	24 x 13
Dimensions (in/*cm*) [2]							
H1 (Height)	10.0/*25.4*	14.0/*35.6*	18.0/*45.7*	18.0/*45.7*	14.0/*35.6*	22.0/*55.9*	22.0/*55.9*
H2 (Height) [3]	11.5/*29.2*	15.5/*39.4*	19.5/*49.5*	19.5/*49.5*	15.5/*39.4*	23.5/*59.7*	23.5/*59.7*
W (Width)	10.0/*25.4*	10.0/*25.4*	80./*20.3*	10.0/*25.4*	14.0/*35.6*	10.0/*25.4*	13.0/*33.0*
D (Depth)	26°F and 0°F plates = 3.0/*7.6*.....-9°F and -18°F plates = 3.38/*8.6*						
Capacity (BTUs)							
Refrigerator (26°F/-3°C)	1243	1708	1980	2174	2356	2653	3469
Freezer (0°F/-18°C)	1117	1536	1780	1955	2118	2385	3118
Freezer (-9°F/-23°C)	1023	1438	1480	1851	2025	2265	2984
Freezer (-18°F/-28°C)	1058	1486	1531	1914	2095	2342	3086
Weight (lb/*kg*)	19.0/*8.6*	26.0/*11.8*	28.0/*12.7*	33.0/*15.0*	34.0/*15.5*	35.0/*15.9*	54.0/*24.5*
Refrigerant Connections [4]	.....1/2” O.D. x 3/4”L - S.S. Stubs.....						

[1] Plates can be mounted in either horizontal or vertical configurations, with connections either at right, left, up or down. Refrigerant line connections are always located on short dimension of plate.

[2] Custom plate sizes on request.

[3] Dimension includes two 3/4” (1.9cm) flanges with 1/4” (6.35mm) diameter mounting holes.

[4] All plates can be prefabricated to customer’s requirements, including copper stubs, flare connections and fittings, crossover assemblies and Swagelock™ fittings.

Installation Guidelines for Holdover Plates

When choosing the proper plate sizes, primary consideration should be given to calculated BTU loads as well as box design and usage. Any special requirements must be determined prior to selection and installation.

Holdover plates are available with 26°F (-3°C) eutectic solution for refrigerator box applications, and 0°F (-18°C), -9°F (-23°C) and -18°F (-28°C) solutions for freezer box applications. The freezer plates are identified with 1, 2, or 3 (for the 0, -9 and -18°F plates respectively) V-notches located on the mounting flange at the same end as the refrigerant line connections. The 26°F plates have no notch in the flange. All plates have a serial code and plate temperature inscribed on the back of the mounting flange on the opposite end.

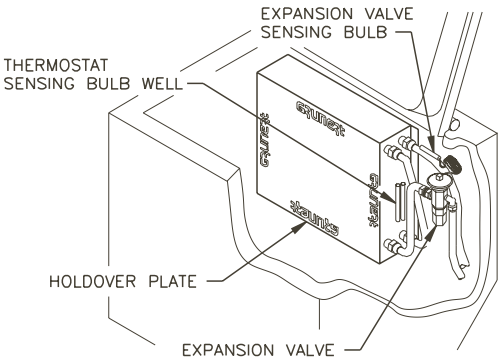
The Grunert line of holdover plates is designed to be installed in any position on a box's interior surface, or as a shelf across the interior space. Each plate has mounting flanges across both short ends (smaller dimension) with 1/4" diameter mounting holes. Secure the plate(s) with the proper fasteners (lag screws, thru-wall connectors, etc.) to support the weight and torsion load from the vessel's movement.

Plates must be mounted with stand-offs to expose the back surface area of the plate to provide proper performance. A minimum of 5/8" (1.6cm) clearance between the box and the back of the plate is recommended.

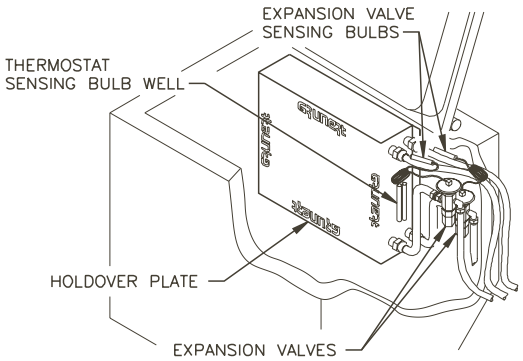
Expansion valves must be located and fastened properly. Do not install expansion valves with the diaphragm on the bottom. Recommended location of the valve is in the box(es) with the plate. The expansion valve sensing bulbs are to be properly located and secured on the outlet (suction line) of the last plate in series. Recommended location is on a horizontal portion of tubing on the top (between ten and twelve o'clock). If either the expansion valve or its sensing bulb must be located outside of the box, each part must be properly insulated to protect against condensation, as well as to allow accurate temperature sensing of the bulb.

Thermostat sensing bulbs are to be inserted into the sensing wells located on the holdover plate. Two sets of wells are located on two sides of each plate. Once a plate has been positioned in a box, the well(s) that are located on the side (vertical surface) should be used for the most accurate sensing of plate temperature.

SINGLE CIRCUIT HOLDOVER PLATE



DUAL CIRCUIT HOLDOVER PLATE



26°F REFRIGERATOR PLATE				
BTU LEAK IN 24 HOURS	VOLUME IN CUBIC FEET* INSULATION** 6"	4"	3"	2"
5200				14
5000				
4800			20	13
4600			18	12
4400				11
4200			16	10
4000				
3800		20	14	
3600		18	12	8
3400		16	10	7
3200	20	14	9	
3000	18	13	8	6
2800		11	7	5
2600	14	10	6	4
2400	12	8	5	
2200	10		4	3
2000	8	6		
1800	6	5	3	2
1600	4	4	2	
1400	3	3		
1200	2	2	1	1
1000				

0°F FREEZER PLATE				
BTU LEAK IN 24 HOURS	VOLUME IN CUBIC FEET* INSULATION** 6"	4"	3"	2"
5200	16	11	8	5
5000		10		
4800	14		7	
4600				4
4400	12	8	6	
4200	10			
4000			5	3
3800	8	6		
3600			4	
3400	6			
3200		4	3	2
3000				
2800	4	③		
2600	3		2	
2400				
2200	2	2		1
2000			1	
1800		1		
1600	1			
1400				
1200				
1000				

−9°F FREEZER PLATE					
BTU LEAK IN 24 HOURS	VOLUME IN CUBIC FEET* INSULATION** 6"	4"	6"	4"	BTU LEAK IN 24 HOURS
5200		10			9600
5000	14				9400
4800					9200
4600	12	8			9000
4400	10				8800
4200					8600
4000	8	6			8400
3800					8200
3600					8000
3400	6	4			7800
3200					7600
3000		3	20		7400
2800	4				7200
2600			18		7000
2400		2			6800
2200	2		16		6600
2000					6400
1800	1	1	14		6200
1600					6000
1400			20		5800
1200			18	12	5600
1000			16		5400

−18°F FREEZER PLATE					
BTU LEAK IN 24 HOURS	VOLUME IN CUBIC FEET* INSULATION** 6"	4"	6"	4"	BTU LEAK IN 24 HOURS
5200	12	8			9600
5000					9400
4800	10				9200
4600					9000
4400	8	6			8800
4200					8600
4000					8400
3800	6			20	8200
3600		4			8000
3400				18	7800
3200	4	3			7600
3000					7400
2800	3			16	7200
2600		2			7000
2400	2			14	6800
2200			20		6600
2000	1	1			6400
1800			18	12	6200
1600			16		6000
1400				10	5800
1200			14		5600
1000					5400

③ EXAMPLE CIRCLED: A 0° freezer box with inside dimensions of 24" height, 12" depth and 18" width has an internal volume of 5184 cubic inches (24x12x18). Divide the 5184 cubic inches by 1728 (one cubic foot) to get three cubic feet. With 4" of insulation, a 2700BTU leak is found from the chart. Referring to the 0° Freezer Capacity (BTUs) row on the front of this sheet, two 16x10 plates (3072BTUs) or one 24x13 plate (3118BTUs) may be used.

* TO CONVERT CUBIC METERS TO CUBIC FEET, MULTIPLY BY 35.31

** CHART IS DESIGNED USING POLY FOAM WITH A TWO POUND DENSITY RATING

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