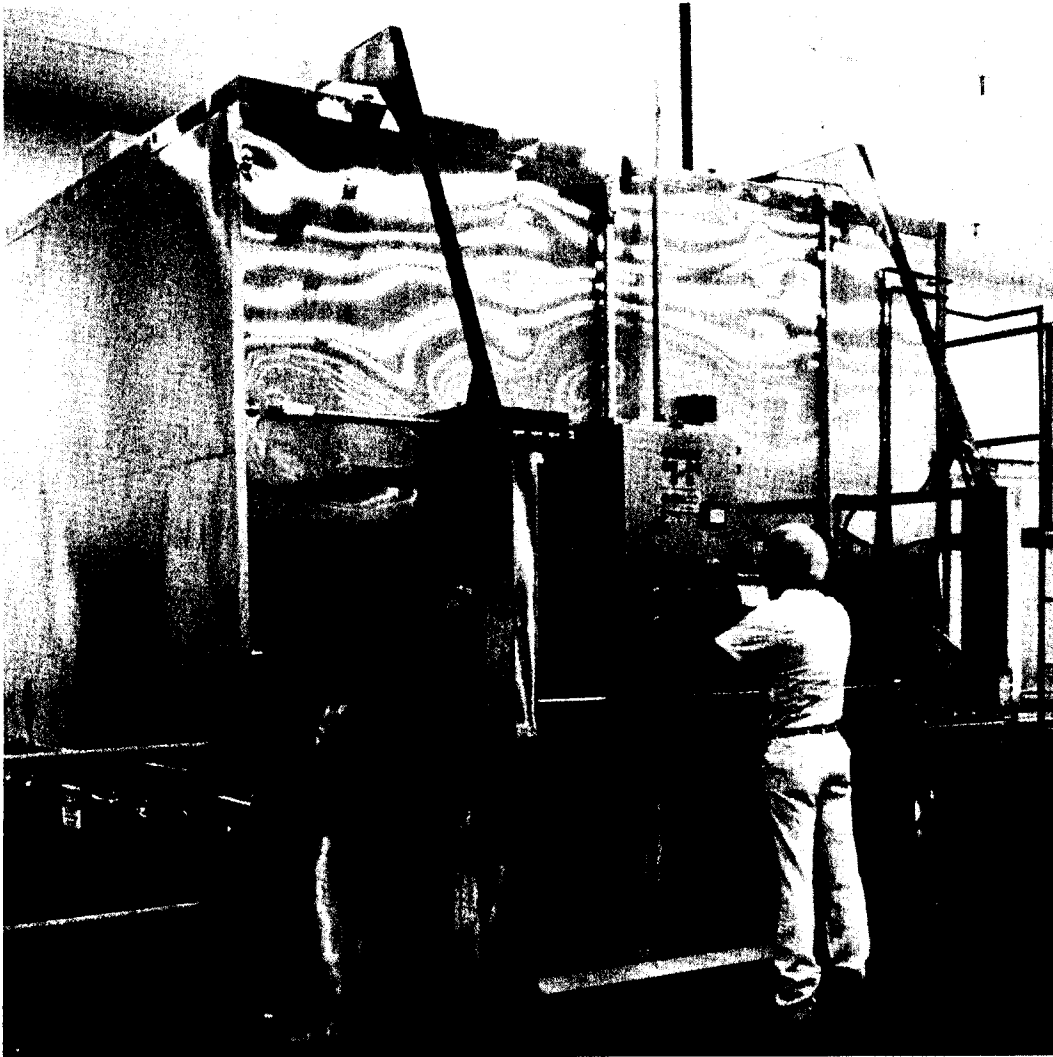
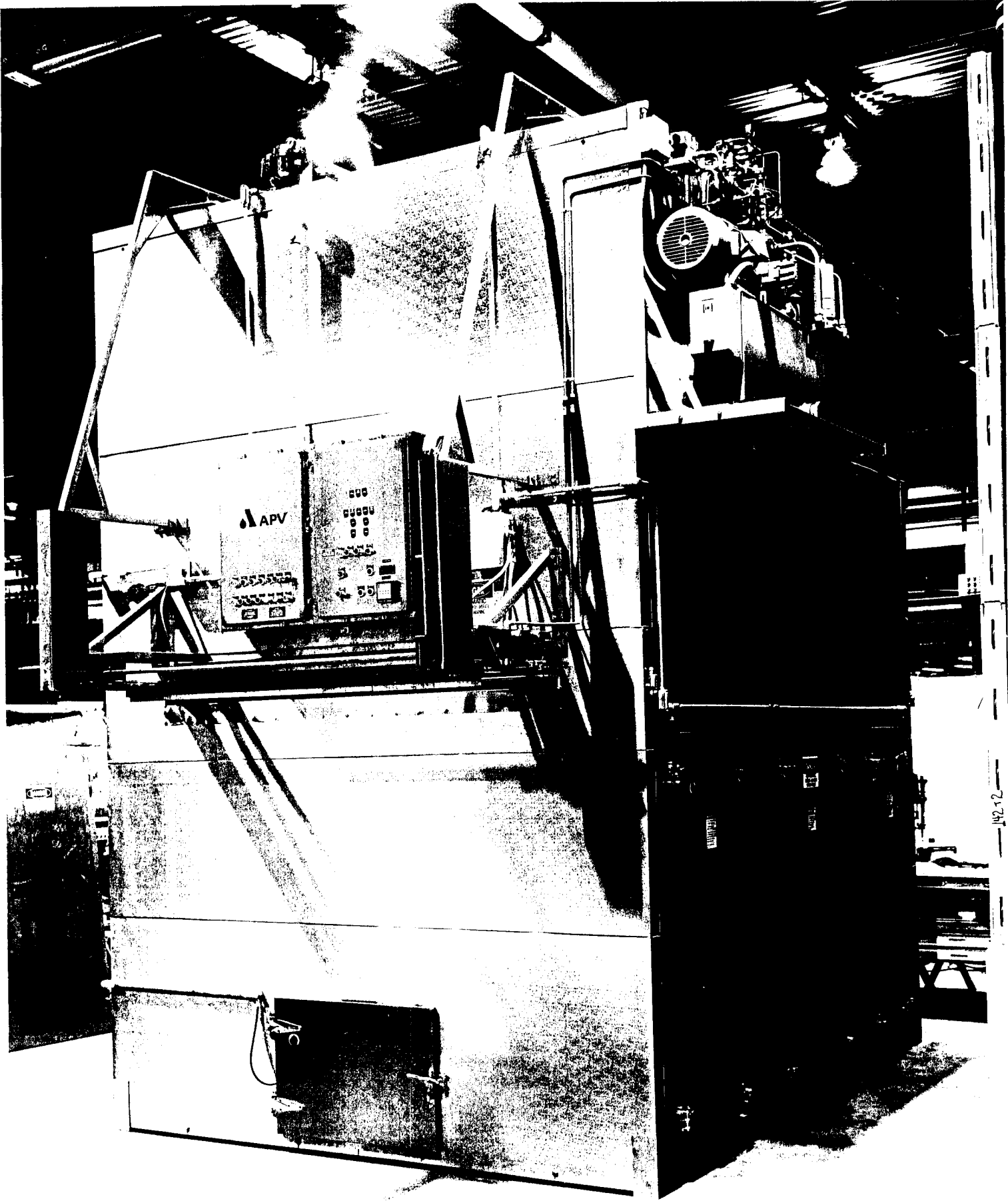




## Automatic Contact Plate Freezers





# More packaged product is frozen in APV Crepaco contact plate freezers than by any other method in the world.

Performance proven for over 30 years, APV Crepaco automatic contact plate freezers offer high capacity production freezing of packaged products on a continuous basis. An efficient direct double contact plate design enables these machines to rapidly freeze the product which ensures quality by minimizing shrinkage and dehydration. These units are used successfully to freeze meat, poultry, bakery products, fish, vegetables, ice cream and specialty entrees. For other applications a pilot plant test may be scheduled to demonstrate the contact plate freezing principle.

Automatic plate freezers come in a number of sizes and throughput rates to suit any continuous freezing operation. All are compact, rugged and simple to operate.

## Benefits of contact plate freezing

### Product Quality Preserved

The rapid freezing of the contact plate method helps maintain desired product characteristics such as texture and flavor. Much smaller ice crystals are formed within red meats, poultry and delicate seafood tissues than is possible with systems designed to freeze product at slow rates. Food cell damage is virtually non-existent. Nutrient fluids and the flavor and aroma elements, essential to retaining product identity after thawing, are largely preserved. The rapid freezing rate also circumvents the risk of product discoloration, further enhancing product acceptance at the consumer level.

### Cost Savings in Energy Use

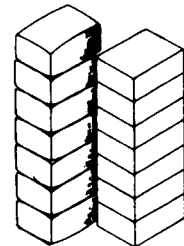
During the freezing cycle, the top and bottom of each food package is in contact with the freezing surface of the contact plate. Since the refrigerant flows through passageways in the flat aluminum

freezer plates, the surface temperature in contact with the package is very near that of the refrigerant temperature. Further, the refrigerant flow is engineered to provide uniform temperatures over the entire plate area, assuring optimum freezing performance.

The combined principles of non-consumable recirculated refrigeration and direct heat absorption through intimate contact with the product surfaces provide outstanding overall freezing economy. Though many variables affect cost, long experience in providing contact plate freezers for a wide range of products indicates that this freezing method is typically less expensive than air blast or cryogenic alternatives.

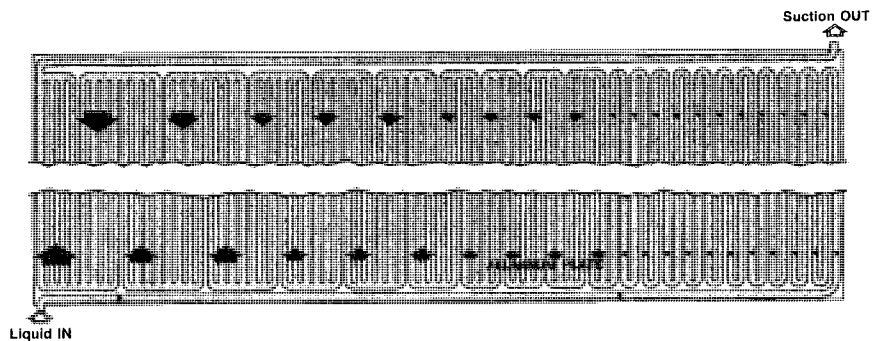
### Reduced Packaging Costs

In a fully loaded station comprising a single layer of package product, the top and bottom package surfaces are in direct contact with the flat freezer plate surfaces and all package sides are in contact with adjacent packages throughout the freezing cycle. The result of this is a uniformly smooth, flat-sided frozen package that stacks well; can be readily shrink-wrapped for pallet-load handling; consumes minimal storage area; and provides excellent retail appearance and acceptance.

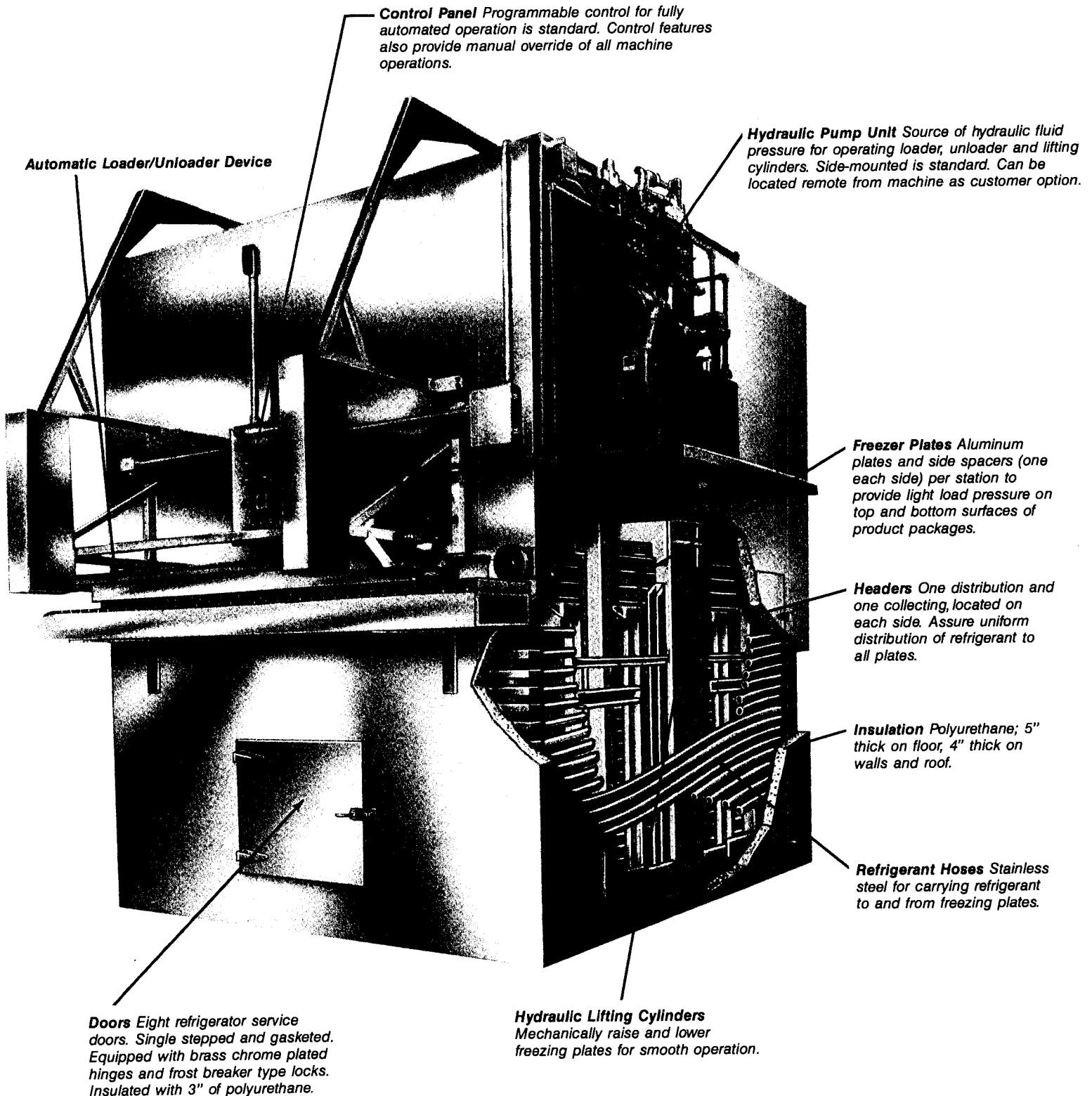


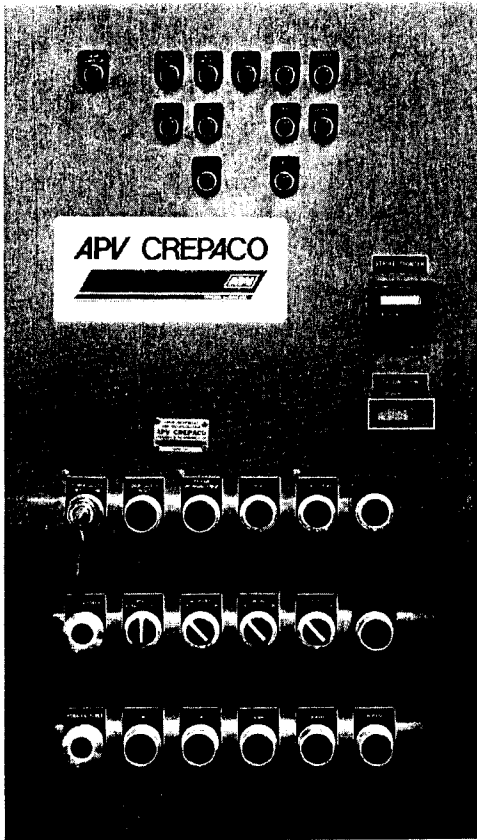
Minimal package side movement may provide the opportunity to use lower cost, nominal thickness packaging materials with no sacrifice in the appearance of the final frozen product. These reductions in packaging material thickness and/or the elimination of secondary protective wrappings often contribute to added improvement in freezing performance.

**The latest in aluminum plate design**  
*Refrigeration media is efficiently circulated through the use of progressive parallel streaming. This provides maximum saturated (wetted) refrigerated surface while maintaining the desired low pressure drop. Maximum utilization of heat exchange surface provides uniform fast freezing over the entire surface of the plate.*

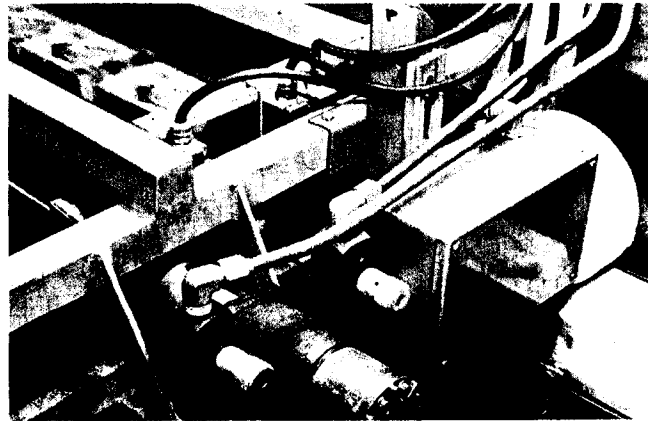


# Features

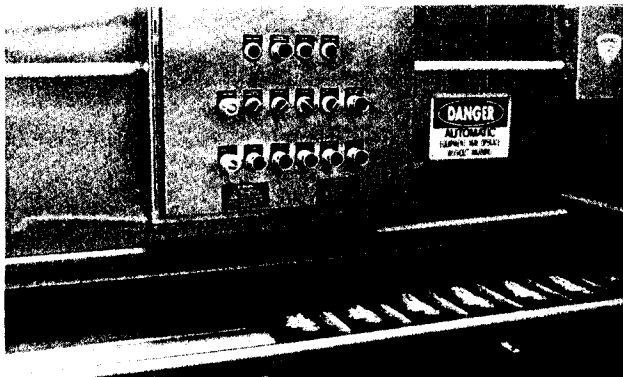




**Control Panel** Programmable control for fully automated operation.

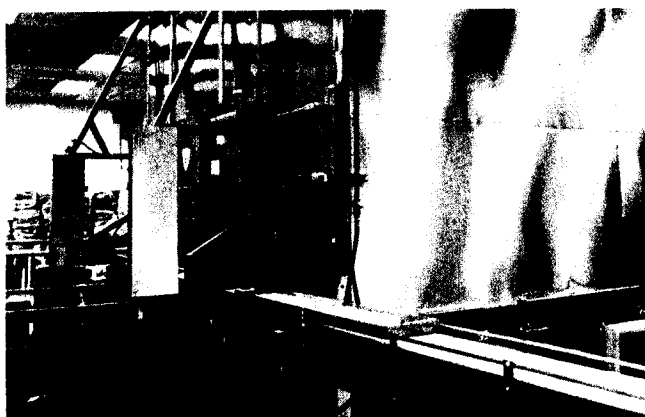
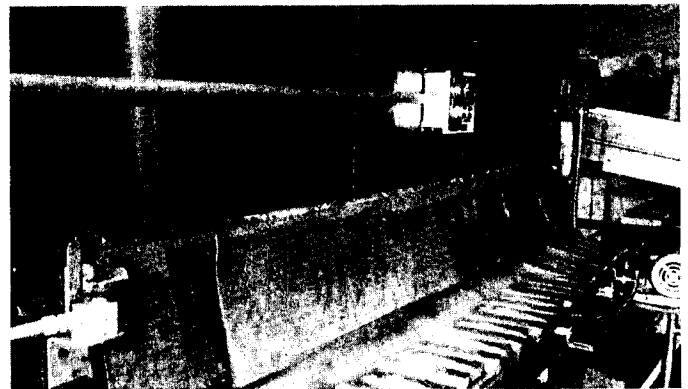


**Sensor Wheel** When a row of infeed (unfrozen) product is full, a non-driving sensor wheel activates the infeed pusher mechanism.



**Automatic Infeed** Fresh packaged product being conveyed into position just prior to being automatically infeed to the freezer.

**Automatic Discharge** Rear of freezer showing frozen product being discharged onto independently driven conveyor assembly.



**Infeed Conveyor** Optional infeed conveyor for routing product to automatic infeed assembly.

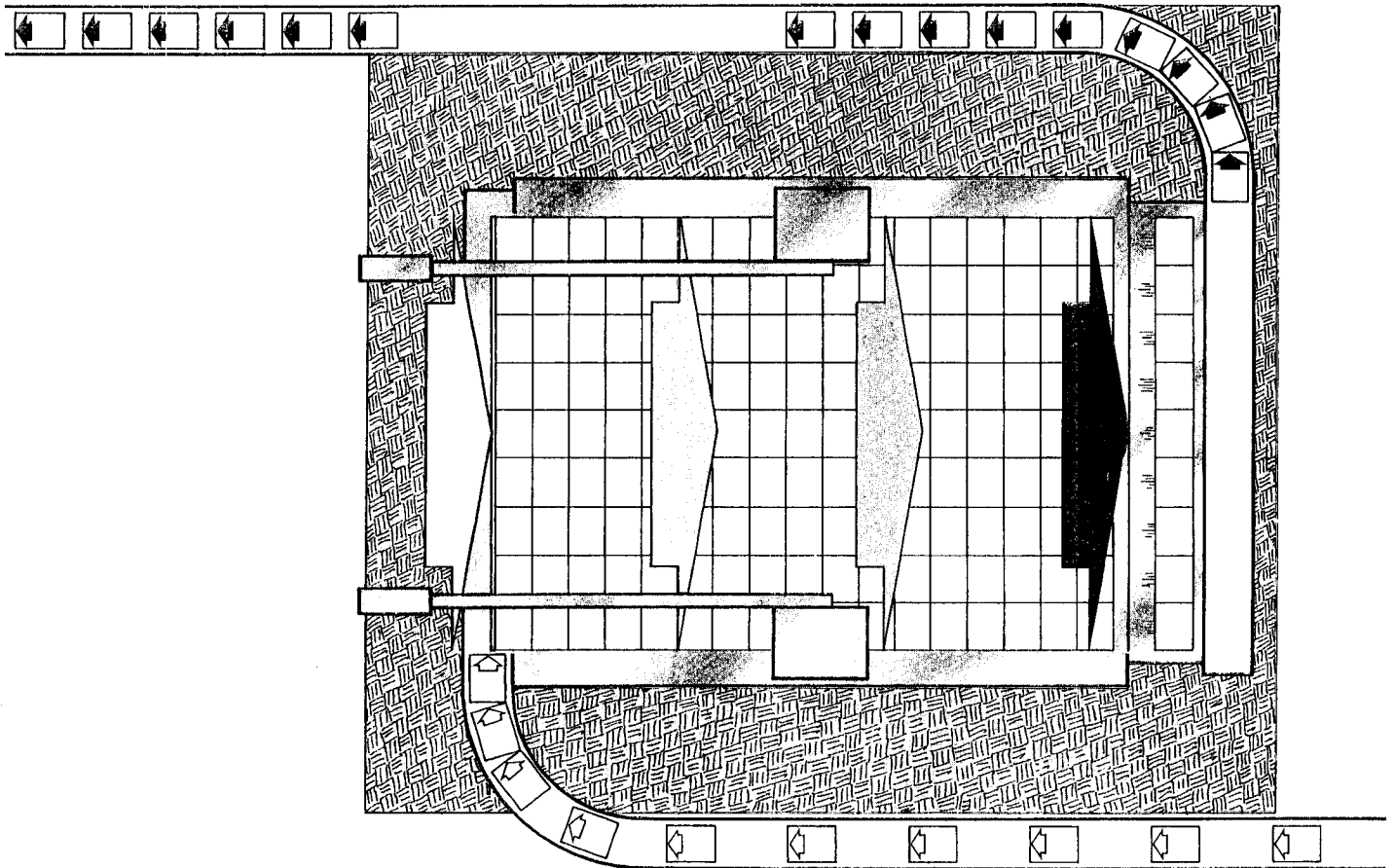
Model 35 Automatic Contact Plate  
Freezing Operation

## Operation

Operating on a "first in — first out" basis, packages are routed by conveyor from the filler/packaging equipment to the infeed conveyor (available as a customer option). A sensing wheel signals when a complete row of packaged product is in position and activates the automatic loader/unloader device. A full length pusher blade sweeps the row of packaged product into the front of the freezer to a predetermined depth. Succeeding rows of unfrozen packages are loaded into the first station until it is completely filled. The next freezing station is automatically moved up to position for product loading. When the last station is filled, the freezer automatically recycles, and all stations, as a single unit, are lowered to the bottom of the freezer.



When the product in the first station has had sufficient residence time to be completely frozen, unfrozen product entering the first station discharges the frozen product through simple displacement.



**APV CREPACO, INC.**  
**SPECIFIC DATA SHEET**

**AMERIOMATIC AUTOMATIC CONTACT PLATE FREEZERS**

It is very simple to calculate the proper number of stations required to freeze a specific sized package in the period of time determined by test or experience.

1. Determine the number of packages per station by using the actual size of package to be handled and make sketches of the plate. (Refer to example below.) Draw in the package using applicable dimensions to determine the most efficient use of space on the plate.

**Note:** Plate sizes are listed by net freezing surface. Since package flaps and sides may have a slight bulge and there is no mechanism to squeeze the package together, an allowance of a few inches should be provided to compensate for this condition. In automatic freezers when the plate is full, there must be a space at the unloading end which is not greater than 1/2 of the package infeed dimension. This is to provide proper space for the package to tilt and slide during the unloading operation.

2. Request production rate in packages per minute.
3. By test curves or using experience factor, estimate freezing time. (As a general rule products such as "TV dinners, pies, etc., require about one (1) hour per inch of thickness. Ice cream and other densely packaged products do not follow this rule and require less time. When in doubt make arrangements to run a test.)

4. Number of stations required = 
$$\frac{\text{Production Rate X Freezing Time in Minutes}}{\text{Packages per Station}}$$

5. With number of stations required as determined in number 4, refer to the Station Selection Chart on back page using the package thickness and model No. as guide.

**Note:** If the number of stations required is less than the number shown in the chart, specify that model freezer, but order only the number of stations required. If the number of stations required is greater, divide the maximum number of stations per freezer into the required number of stations and this will give the number of freezer units required. As an example: if 40 stations are required and the maximum stations per unit for that package are 30, it would be best to select two (2) twenty-station units permitting the addition of the other 10 stations per unit as production requirements are increased.

**EXAMPLE FOR COMPUTING PROPER SIZED AMERIO FREEZER**

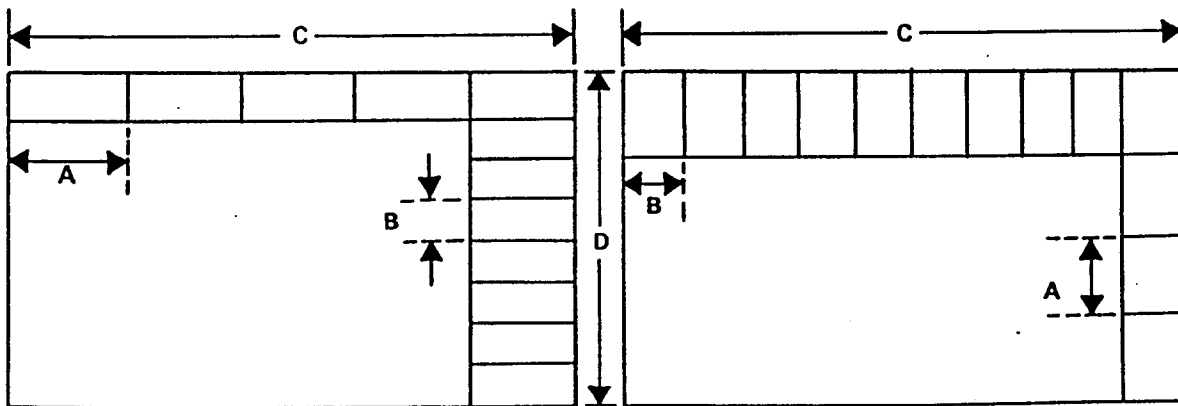


FIGURE #1

FIGURE #2

A }  
B } Package Dimensions

C }  
D } Package Dimensions

Figure #1

Figure #2

Dimensions  $C \div A$  = Number of Packages Across  
Dimensions  $D \div B$  = Number of Packages Deep

Dimensions  $C \div B$  = Number of Packages Across  
Dimensions  $D \div D$  = Number of Packages Deep

Use this method, determination is made on the maximum number of packages that can be handled per station. Unless customer specifies otherwise, selection should be made using layout which provides for maximum number of packages per station.

# Time/Temperature Freezing Performance

Listed in the chart below are products, their weight/volume, package thickness, infeed temperature, retention time and refrigeration factor. Using these figures as a guideline, the processor can approximately determine the process parameters for his product.

## Considerations that affect chart use:

- Prepared foods may vary in refrigeration loads due to use of different raw materials.
- Tonnages shown in the chart are reference point figures. Actual refrigeration factors should be calculated for each condition.
- Higher temperatures at the suction side of the refrigeration will generally require an increase in product retention time.
- The discharge of product at core temperatures higher than shown and allowed to equalize may materially decrease required retention time.
- Retention time is affected by product composition, packaging technique, package type and other variables.

Product Group	Product	Weight or Volume	Freezing Thickness		Entering Temperature		Retention Time (In Minutes)	Refrigeration Factor
			Inches	Cm.	F.	C.		
Vegetables	In Sauce	10 oz.	15/16	2.38	70	21	45-55	1.5-2.0 TR/100 lb. 100-133 kcal/kg
	Fresh Packed in Cheese or Butter Sauce	10 oz.	1½-1¾	3.8			85-110	
		40-48 oz.	2-½	5.35			140-180	
Baked Goods	Donuts-Glazed and Filled	½ Doz.	1-¾	3.5	70	21	35-45	.83 TR/100 lb. 55 kcal/kg
	Rolls - "Heat and Serve"	1 Doz.	1-½	3.8	80	26.5	35-45	.86 TR/100 lb.
	Fruit Pies	10 oz.	1-¾	3.5	70	21	40-65	57 kcal/kg
	Pumpkin Pie	12 oz.	1-¾	3.5			90-110	
Prepared Foods	Pot Pies	8 oz.	1-¾/16	3.97	70	21	90-110	.86 TR/100 lb.
	Meat Loaf Dinner	11 oz.	1-½/8	2.86	90	32	70-80	57 kcal/kg
Meat Products	Hamburger Patties	45 oz.	2-½	5.35	40	4.5	55-60	1.2 TR/100 lb.
	Hamburger Patties	190 oz.	5	12.7			220-260	80 kcal/kg
	Sausage, Pork Link	16 oz.	1-¾	3.5			60-80	.75 TR/100 lb. 50 kcal/kg
Fish	Whiting 5 lb. Block	60 oz.	2-½	6.35	40	4.5	150-170	1.25 TR/100 lb. 83 kcal/kg
Dairy Products	Ice Cream	½ Gal.	3-½	8.9	22	-5.5	90-100	360 BTU/Gal.
	Ice Cream	½ Gal.	5	12.7			140-160	23 kcal/liter

All temperatures and retention times are based on 0°F (-18°C) core hardness at discharge and -45°F (-43°C) plate temperature.

TR = Tons of Refrigeration

APV Crepaco, Inc. reserves the right to make changes in models, materials and specifications at any time without prior notice and without obligation to make such changes available for similar, previously manufactured machines.



APV Crepaco Inc

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Tel: (414) 648-8311, Fax: (414) 648-3418



**APV CREPACO, INC.**  
**SPECIFIC DATA SHEET**

**STATION SELECTION CHART**  
**AMERIOMATIC PLATE FREEZERS**  
**(Aluminum Plates)**

MODEL	<del>21</del>	<del>31</del>	35	37
PLATE SIZE	70 x 72 in (1778 x 1829)	73 1/2 x 127 in (1860 x 3225)	92 x 144 in (2340 x 3658)	92 x 156 in (2340 x 3962)
STANDARD ONE-PIECE CABINETS		"OVERSIZE" SEMI-KNOCK DOWN CABINETS		
NUMBER OF STATIONS	MAXIMUM PACKAGE THICKNESS		MAXIMUM PACKAGE THICKNESS	
	<del>MODEL 21</del>	MODELS <del>21</del> & 35	MODELS <del>21</del> & 35	MODEL 37
10	3 11/16 in (94)	5 in (127)	6 3/16 in (158)	7 1/2 (191)
11	3 1/4 in (83)	4 7/16 in (113)	5 1/2 in (140)	6 11/16 in (170)
12	2 5/16 in (74)	4 in (102)	5 in (127)	6 1/16 in (154)
13	2 5/8 in (67)	3 5/8 in (92)	4 1/2 in (114)	5 1/2 in (140)
14	2 3/8 in (60)	3 1/4 in (83)	4 1/8 in (105)	5 1/16 in (129)
15	2 1/8 in (54)	3 in (76)	3 3/4 in (95)	4 5/8 in (117)
16	1 15/16 in (49)	2 3/4 in (70)	3 1/2 in (89)	4 5/16 in (109)
17	1 3/4 in (44)	2 1/2 in (63)	3 3/16 in (81)	4 in (100)
18	1 5/8 in (41)	2 5/16 in (58)	3 in (76)	3 11/16 in (94)
19	1 7/16 in (36)	2 1/8 in (54)	2 3/4 in (70)	3 7/16 in (87)
20	1 5/16 in (33)	2 in (50)	2 5/16 in (65)	3 1/4 in (83)
21	1 1/4 in (32)	1 7/8 in (48)	2 3/8 in (60)	3 in (76)
22	1 1/8 in (28)	1 11/16 in (43)	2 1/4 in (57)	2 13/16 (71)
23	1 in (25)	1 9/16 in (40)	2 1/8 in (54)	2 11/16 (68)
24	—	1 1/2 in (38)	2 in (50)	2 1/2 in (63)
25	—	1 3/8 in (35)	1 7/8 in (48)	2 3/8 in (60)
26	—	1 1/4 in (32)	1 3/4 in (45)	2 1/4 in (57)
27	—	1 3/16 in (30)	1 5/8 in (41)	2 1/8 in (54)
28	—	1 1/8 in (28)	1 5/16 in (40)	2 in (50)
29	—	1 1/16 in (27)	1 7/16 in (37)	1 7/8 in (48)
30	—	1 in (25)	1 3/8 in (35)	1 13/16 in (46)
31	—	15/16 in (24)	1 5/16 in (33)	1 11/16 in (43)
32	—	—	—	1 5/8 in (41)
33	—	—	—	1 9/16 in (40)
34	—	—	—	1 1/2 in (38)
35	—	—	—	1 7/16 in (36)
36	—	—	—	1 5/16 in (33)
37	—	—	—	1 1/4 in (32)

2

**APV CREPAC  
SPECIFIC DATA**

**AMERIOMATIC PLATE  
(Basic Dimensions, Specific)**

MODEL NUMBER	REFRIGERANT	CONNECTION SIZE		CABINET DIMENSIONS			MINIMUM MOVE	
		All Pipe Sizes Are Nominal		Less Hydraulic Pump Unit, Loader/Unloader	Including 12" (1') Cyl. Clearance	FULLY ASSEMBLED		
		WELD NECK WITH COMPANION FLANGE				Front	Side	Height
		LIQUID	SUCTION					
<del>MODEL 21</del>	NH <sub>3</sub>	3 in (76)	4 in (101)	9 ft 6 in (2896)	7 ft 0 in (2134)	10 ft 6 in (3200)	10 ft 0 in (3048)	7 ft 8 in (2337)
<del>MODEL 31</del>	NH <sub>3</sub>	3 in (76)	4 in (101)	10 ft 2 in (3099)	12 ft 1 in (3683)	13 ft 5 in (4089)	10 ft 6 in (3200)	12 ft 9 in (3886)
MODEL 35	NH <sub>3</sub>	3 in (76)	5 in (127)	11 ft 8 in (3556)	13 ft 10 in (4216)	13 ft 5 in (4089)	12 ft 0 in (3658)	12 ft 9 in (3886)
MODEL 37	NH <sub>3</sub>	3 in (76)	5 in (127)	11 ft 8 in (1680)	14 ft 10 in (4521)	18 ft 0 in (5486)	N/A	N/A

**Notes:**

- A. Minimum space required for removal of plate should be equal to length of plate. If space is not available, plate may be tilted at removal in approximately one foot less space.
- B. Dimensional drawing (ADF) will be supplied per customer order.
- C. Hydraulic motor system 3/60/230—460V. unless otherwise specified. Control wiring is 1/60/115V.
- D. Consult factory if production rates require loading of station in less than one minute.
- E. Single roof mounted cylinder design adds 5 ft 2 in extension on height. For in-plant assembly, read height at cylinder.

\*Models other than standard one-piece

\*\*This Load Factor is based on lifting c

**FREEZERS**  
**(Dimensions & Weights)**

DIM CLEARANCE TO UNIT INTO PLANT			WEIGHTS (APPROXIMATE)				
			Basic Wt.* 10-Station Unit Incl. Pump	Wt. Per Extra Station	Refrig. Wt. Per Station @100% Liquid NH <sub>3</sub>	Maximum Allowable Wt. of Product Per Station Uniform Loading (14#/Sq. Ft.)	Maximum Load** Rating of Freezer Includes Product; Plus Refrigerant; Plus Plates
SEMI-KNOCKED DOWN							
Front	HEIGHT						
	Standard	Oversize					
N/A	N/A	N/A	14,500# 6569 kg	275# 125 kg	60# 27 kg	500# 227 kg	15,000# 6795 kg
10 ft 6 in (3200)	7 ft 9 in (2362)	8 ft 10 in (2692)	19,000# 8,626 kg	500# 227 kg	120# 55 kg	1,000# 453 kg	31,000# 14,075 kg
12 ft 0 in (3658)	7 ft 9 in (2362)	8 ft 10 in (2692)	23,000# 10,440 kg	700# 318 kg	170# 77 kg	1,300# 589 kg	34,000# 15,435 kg
12 ft 1 in (3683)	N/A	9 ft 0 in (2743)	28,000# 12,684 kg	800# 362 kg	185# 83 kg	1,400# 634 kg	40,000# 18,120 kg

Shipping Weight = Basic Weight + (Extra Stations X Weight per Station)

Operating Weight = Shipping Weight + (No. of Stations X Refrigerant Weight per Station) +  
(No. of Stations X Product Weight per Station)

( ) = Millimeters

Approximate Export Weights and Dimensions available on application.

N/A = Not Applicable

Replacement Plates:

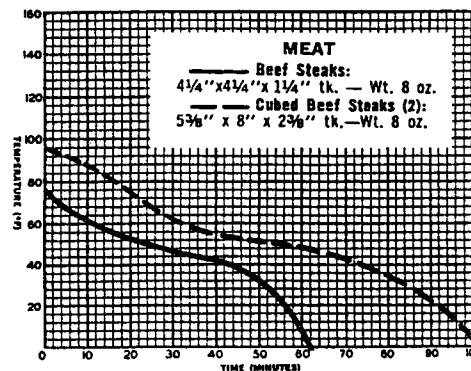
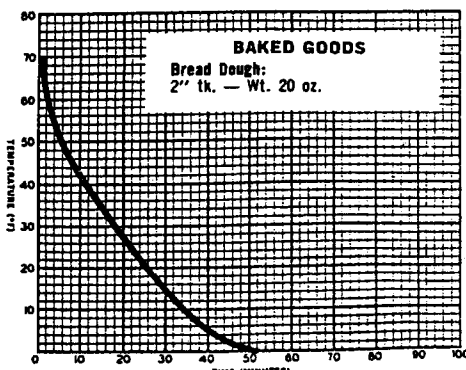
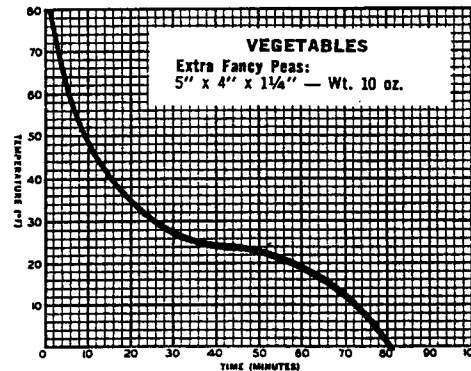
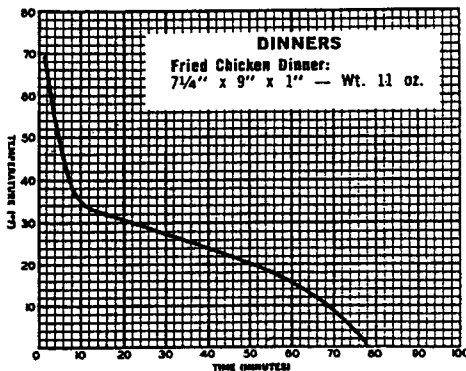
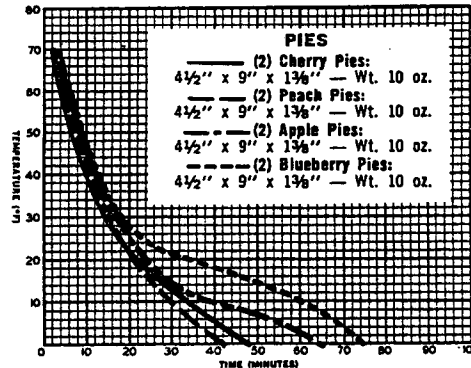
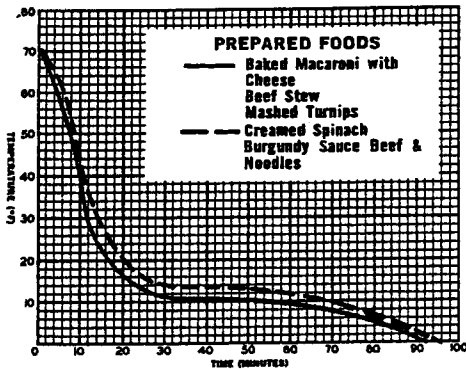
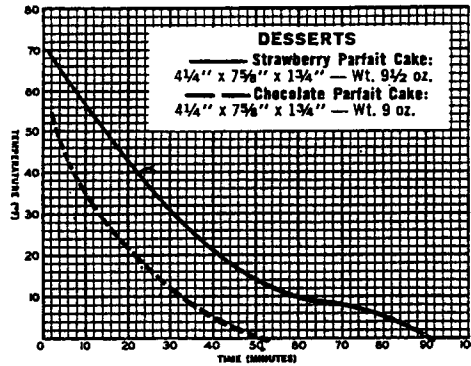
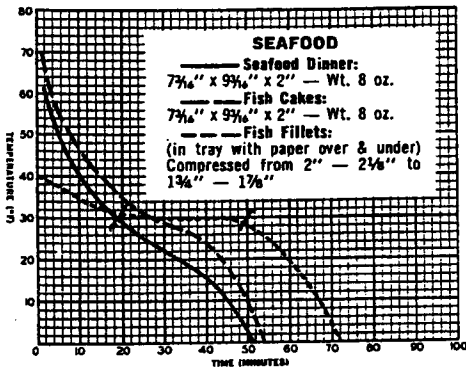
For additional information and details on Replacement Plates Refer to Price Sheet U-1-205.100

Spacer Sticks: Available per customer request.

consult factory.  
capacity of hydraulic cylinders.



**APV CREPACO, INC.**  
**SPECIFIC DATA SHEET**



typical  
**TIME-  
 TEMPERATURE  
 CHARTS**  
 of products  
 frozen in  
**AMERIC**  
**CONTACT PLATE  
 FREEZERS**

*Fast Plate Freezing means  
 a Finer Quality Product...  
 at a Lower Cost to You...*

LET **AMERIC**  
**PROVE IT!**

F.O.B. Lake Mills, WI

Prices and Specifications subject to change without notice