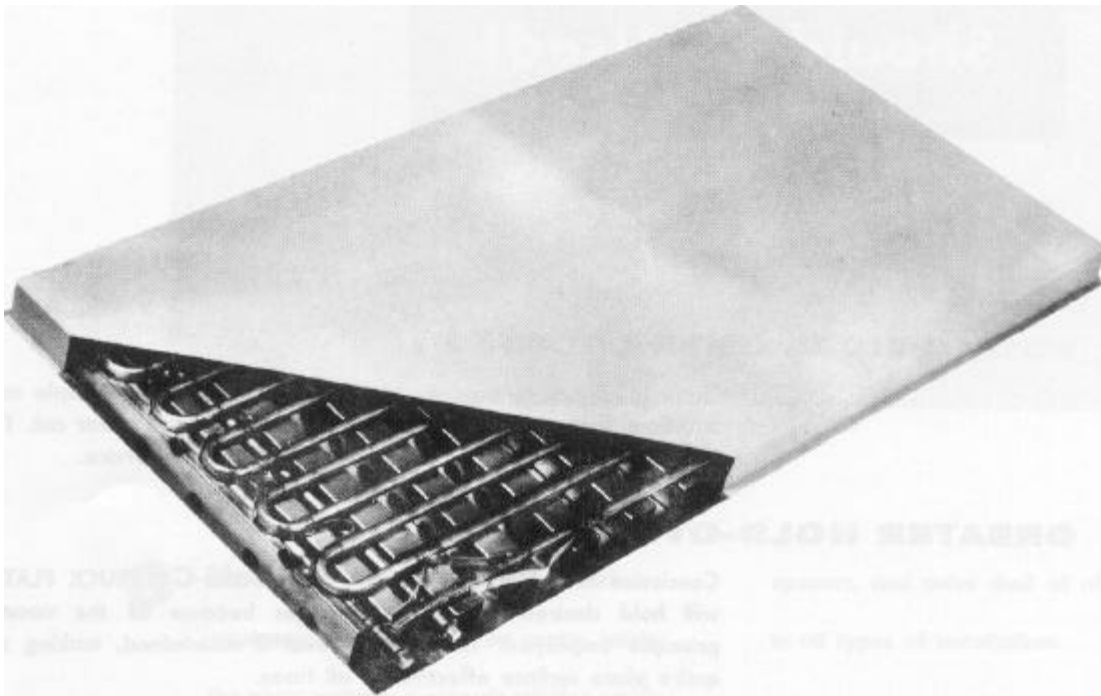


DOLE ENGINEERING CATALOG—SECTION CE

JANUARY 1991

Cold-Cel[®] HOLDOVER TRUCK PLATES



Cold-Cel[®] IMPROVED HOLDOVER TRUCK PLATES

**ENGINEERED TO MAINTAIN
ANY TEMPERATURE REQUIRED THROUGHOUT THE TRIP!**

DOLE continues to pioneer in the truck refrigeration field thus always assuring you of the finest in quality and the most in service for your refrigeration dollar. Many years of excellent service and the increasing growth of DOLE users have continued to prove DOLE as one of the leaders in mobile refrigeration equipment. There is no substitute for experience, dependability and value.

WHY

DOLE Cold-Cel TRUCK PLATES Should Be Used!

ECONOMICAL OPERATION:

There is no maintenance necessary because of rugged simple construction. There are no moving parts and nothing to wear out. The heavy rust-proof zinc finish assures many years of service.

GREATER HOLD-OVER VALUES:

Conclusive tests have shown that DOLE **Cold-Cel** TRUCK PLATES will hold desired temperatures longer because of the vacuum principle employed. The solution level is maintained, making the entire plate surface effective at all times.

QUICKER PULL-DOWN:

Because of DOLE'S exclusive construction and vacuum principle the coils contact the surface of the plate and thus provide for better heat transfer through conduction—hence quicker pull-down.

MORE PLATE SURFACE:

Actual measurements show that **Cold-Cel** TRUCK PLATES have more effective refrigerating surface than any other plate made.

EASE OF INSTALLATION:

DOLE'S new four-fitting **Cold-Cel** TRUCK PLATE assures easy installations with a minimum of piping and connections.

WIDE RANGE OF STANDARD SIZES:

The sizes of **Cold-Cel** TRUCK PLATES have been especially selected to fit the standard body sizes of most manufacturers—thus assuring engineered equipment for modern food transportation.

Cold-Cel[®] HOLDOVER TRUCK PLATES



The outside steel shell or jacket encloses continuous steel tubing. The space inside the plate contains a eutectic solution which is under a vacuum.

Finned spacers break the frozen eutectic solution into many cubes thus bringing the outer plate temperature close to the refrigerant temperature.

DOLE'S vacuum principle makes positive metal to metal contact between the coil,

spacers, and outer shell at all times and in all types of installations.

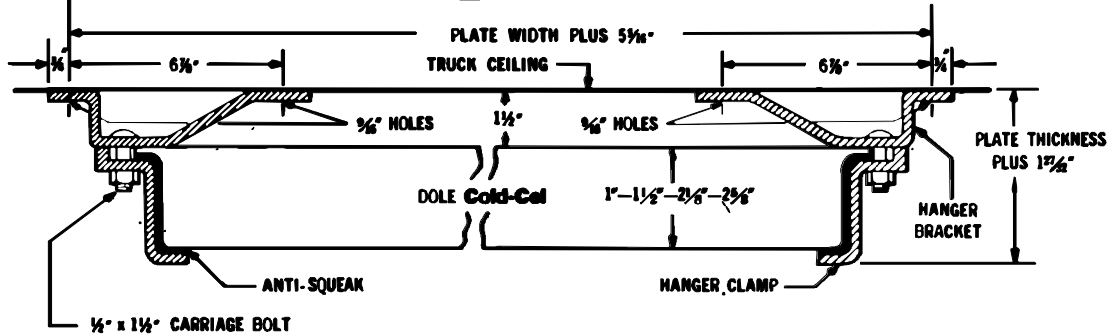
4 Note that DOLE'S four connection plates allow for easy installations in all types of bodies.

5 DOLE'S rugged construction and heavy zinc finish gives the plates long life which has been proven over and over again. Plates which were installed in the 30's are still giving excellent service.

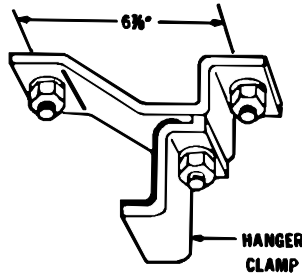
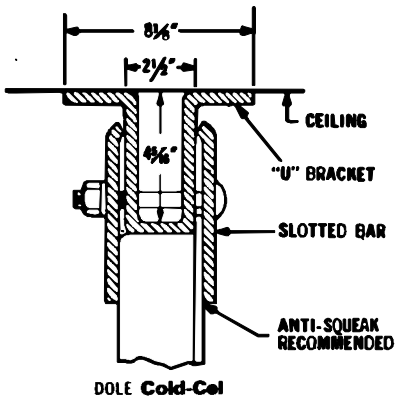


TRUCK PLATE INSTALLATION DETAILS

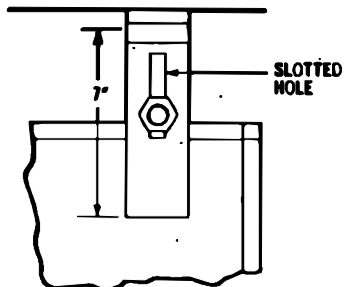
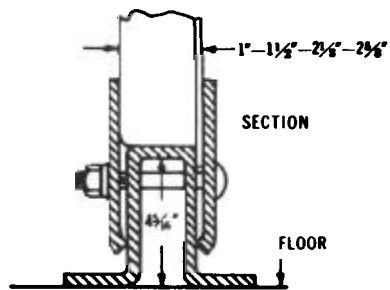
Cold-Cel TRUCK PLATE HANGER INSTALLATION



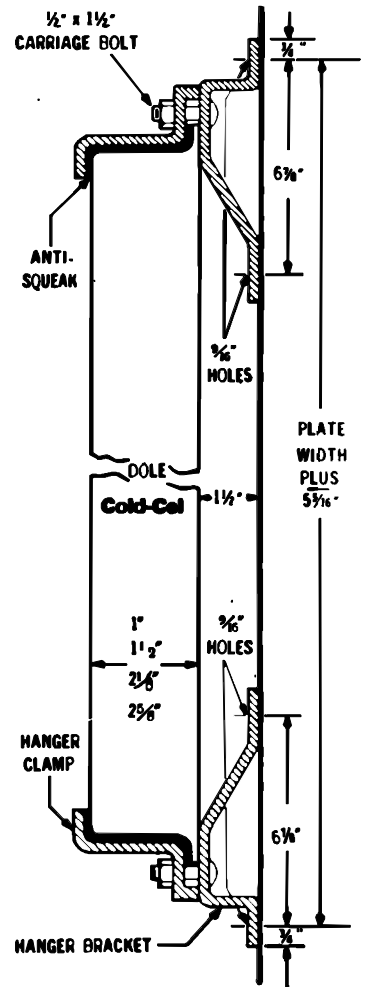
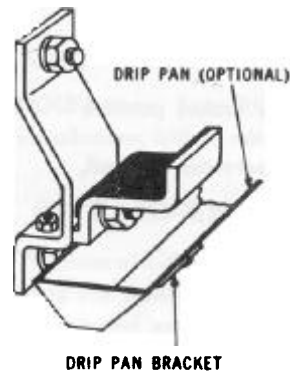
HORIZONTAL MOUNTING



HANGER BRACKET



PARTITION MOUNTING



WALL MOUNTING

How To Calculate DOLE Cold-Cel[®]

New and improved insulations and insulating methods, body construction and changes in loading and delivery patterns have created the need for a more accurate method of calculating holdover truck plates than was acceptable a few years ago. The following presents such a method giving consideration to the latest practice in body construction and usage.

The main difference between this and former methods is in the determination of the service heat gain, now calculated on the basis of the interior cubical content, instead of a percentage of the wall heat leakage. This is the only additional calculation required to those formerly needed. Instructions accompany each table and allow calculations to be easily summarized and tabulated.

TABLE I gives the btu/hr leakage (wall gain) load for hi temp and lo temp bodies for 115° (Southwest), 100° (South) and 90° (North) outside design air temperature and for various thicknesses of insulation. Temperature difference is already taken into consideration so multiplying the proper factor by the number of square feet outside area of the body, or body section, gives the desired result. The amount of plate surface necessary to handle the hourly wall heat gain may be obtained by multiplying

the "Plate" factor by the same figure.

TABLE II gives the service heat gain and plate required to handle it, obtained in similar manner except using the number of cubic feet internal volume as a multiplier.

TABLE III gives the factor by which the result from TABLE II is multiplied if Service is greater than light.

The actual plate sizes are determined from page 7 in accordance with the total requirements from TABLES I and II and from the configuration of the truck body dimensions, door locations, etc. The total effective holdover available is also found on page 7. Holdover time in hours is the result of this figure divided by total hourly gain from TABLES I, II and III.

Required hourly compressor capacity in btu is the sum of the hourly wall heat gain (TABLE I) multiplied by 24 (hours) and the service heat gain multiplied by the number of hours the vehicle is on the road, divided by the number of hours of plug-in time available. The horsepower of the corresponding unit is found in TABLE IV.

Actual plug-in time is the total daily load found in the preceding paragraph divided by compressor capacity (TABLE IV).

TABLE I
WALL HEAT GAIN (Btu/hr) AND REQUIRED PLATE SURFACE per sq ft Outside Area

Urethane Foam Insulation Thickness (1) In.	Lo Temp Bodies (0°) – 18° Solution						Hi Temp Bodies (38°) + 18°					
	Outside Air Design Temperature											
	115°		100°		90°		115°		100°		90°	
	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate
3							4.72	.118	3.80	.095	3.19	.080
3 1/2							4.05	.101	3.26	.082	2.73	.068
4	5.29	.147	4.60	.128	4.14	.115	3.54	.089	2.85	.071	2.39	.060
4 1/2	4.70	.131	4.09	.114	3.68	.102	For Partition Leakage between high and low temperature compartments in combination bodies use 1/2 the 115° factors above.					
5	4.24	.118	3.68	.102	3.32	.092						
6	3.53	.098	3.07	.085	2.76	.077						

USE OF TABLE: To determine HOURLY HEAT GAIN through walls, floor and roof of body, multiply the figure in the "Btu/hr" column under the appropriate outside design temperature and in line with the thickness of insulation by the NUMBER OF SQUARE FEET OF OUTSIDE AREA of the body.

To determine the SQUARE FEET OF EFFECTIVE PLATE SURFACE for THIS PORTION OF THE TOTAL LOAD, multiply the corresponding figure under the "Plate" heading by the number of square feet of outside area.

IMPORTANT: These figures ARE TO BE ADDED to the corresponding results from Table II to get TOTAL HOURLY Btu LOADS AND PLATE REQUIREMENTS.

(1) Based on body heat leak coefficient = (0.16 Btu)/(hr)(sq ft)(F/in.) x (1.15 Framing Factor)
= (0.184 Btu)/(hr)(sq ft)(F/in.)

TRUCK PLATE Requirements



TABLE II
SERVICE HEAT GAIN (Btu/hr) AND REQUIRED PLATE SURFACE per cu ft Inside Volume

Internal Volume of Body - Cu ft	Lo Temp Bodies (0°) - 18° Solution						Hi Temp Bodies (38°) + 18°					
	Outside Design Temperatures											
	115°		100°		90°		115°		100°		90°	
	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate	Btu/hr	Plate
To 120 Cu ft	11.50	.320	10.00	.278	9.00	.250	7.70	.193	6.20	.155	5.20	.130
To 130 Cu ft	10.35	.288	9.00	.250	8.10	.225	6.93	.173	5.58	.140	4.68	.117
To 150 Cu ft	9.20	.255	8.00	.222	7.20	.200	6.16	.154	4.96	.124	4.16	.104
To 200 Cu ft	8.05	.223	7.00	.194	6.30	.175	5.39	.135	4.34	.109	3.64	.091
To 250 Cu ft	7.48	.208	6.50	.181	5.85	.163	5.00	.125	4.03	.101	3.38	.085
To 300 Cu ft	6.90	.192	6.00	.167	5.40	.150	4.62	.116	3.72	.093	3.12	.078
To 375 Cu ft	6.33	.176	5.50	.153	4.95	.138	4.24	.106	3.41	.085	2.86	.072
To 475 Cu ft	5.75	.160	5.00	.139	4.50	.125	3.85	.096	3.10	.078	2.60	.065
To 625 Cu ft	5.18	.144	4.50	.125	4.05	.113	3.47	.087	2.79	.070	2.34	.059
To 800 Cu ft	4.83	.135	4.20	.117	3.78	.105	3.23	.081	2.60	.065	2.18	.055
To 1000 Cu ft	4.60	.128	4.00	.111	3.60	.100	3.08	.077	2.48	.062	2.08	.052
To 1200 Cu ft	4.49	.124	3.90	.108	3.51	.097	3.00	.075	2.42	.061	2.03	.051
To 1500 Cu ft	4.37	.122	3.80	.106	3.42	.095	2.93	.073	2.36	.059	1.98	.050
To 1800 Cu ft	4.26	.118	3.70	.103	3.33	.093	2.85	.071	2.29	.057	1.92	.048
To 2200 Cu ft	4.14	.115	3.60	.100	3.24	.090	2.77	.069	2.23	.056	1.87	.047

Above figures apply for "Light" Service as defined. See Table III for multipliers for other types of Service.

USE OF TABLE: To determine HOURLY HEAT GAIN from service, such as door openings, infiltration etc., multiply the "Btu/hr" figure under the appropriate outside design temperature and in line with the cubic volume figure equal to or less than actual by the **actual** NUMBER OF CUBIC FEET contained in the body.

To determine SQUARE FEET OF EFFECTIVE PLATE SURFACE required for THIS PORTION OF THE TOTAL LOAD, multiply the corresponding figure under the "Plate" heading by the NUMBER OF CUBIC FEET contained in the body.

IMPORTANT: These figures ARE TO BE ADDED to the corresponding results from Table I to get TOTAL HOURLY Btu LOADS and PLATE REQUIREMENTS.

TABLE III
MULTIPLIERS FOR VARYING SERVICE CONDITIONS DETERMINED BY USE OF TABLE II

Type of Service	Holdover Plates
	1.00
Medium	1.50
Heavy	2.00

LIGHT SERVICE is defined as—routes with only a few major drop offs.

MEDIUM SERVICE is defined as—50% more. Routes with less than four 4 minute door openings per hour.

HEAVY SERVICE is defined as—100% more. Routes with four or more 2 minute door openings per hour.

NOTE: For portal to portal delivery where actual door openings are not a factor, use Table I only, increasing the results obtained by 25% to compensate for infiltration of outside air into the body due to the air ram effect on the nose of the truck when travelling at relatively high speeds on the open road.

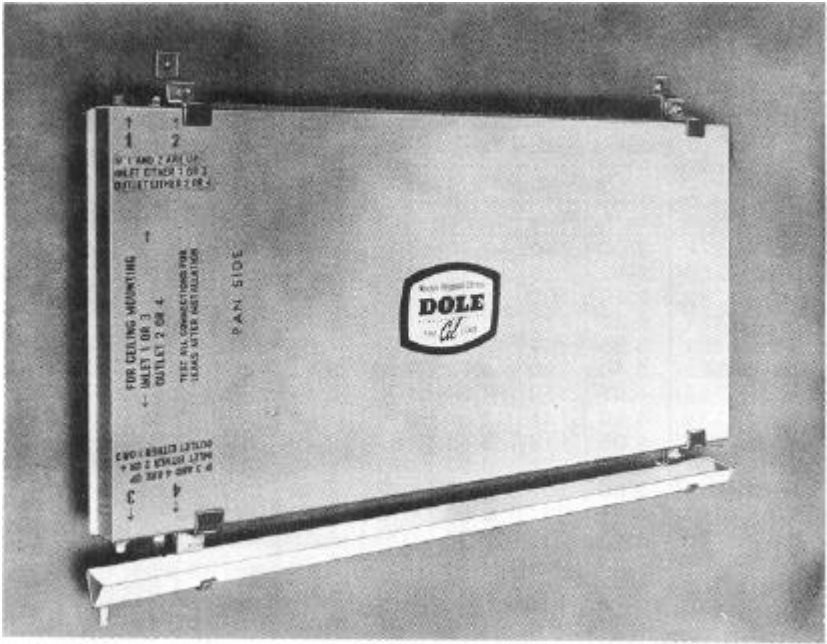
USE OF TABLE: If service is greater than light as defined, multiply "Service Heat Gain" by corresponding factor from Table III. Recommend for best product delivery and/or return temperature, use heavy (2.00) regardless of actual service conditions.

TABLE IV
EFFECTIVE COMPRESSOR CAPACITIES (BTU/hr) FOR PLATE APPLICATIONS ALLOWING 2° to 5° LOSS THROUGH PLATE AND SUCTION LINES

Refrigerant	R-12 + 5° ET	R-502 - 30° ET
Comp. H.P.	+ 18° Plates (Hi)	- 18° Plates (Lo)
1/2	3000	
3/4		
1		3350
1 1/2		
2		7200
		11500
		16250

USE OF TABLE: Divide Total Daily Load (hourly wall heat gain times 24 (hrs) plus hourly service heat gain times hours road time) by number hours plug-in time available to determine compressor capacity required...or if compressor exists divide total daily load by corresponding compressor capacity to determine hours of plug-in time required.

Typical Installation



HOLDOVER TRUCK PLATES


*Mounted With
Drip Pan*

WARRANTY - Cold-Cel Truck Plates

The Company warrants this Dole Vacuum Hold Over Truck Plate to be well made, of good material, and free from defects. It is guaranteed against any defect in material or workmanship for TWO years providing, if claimed defective, it is returned to the Company, transportation charges prepaid. The Company's liability in all events shall be limited to replacing or repairing this Dole Truck Plate, whichever it deems advisable. The Company shall not be liable for any damage of any nature caused by defects in workmanship or material or for any other reason, but its liability shall be limited to the value of the Dole Truck Plate guaranteed, and correction of any defects in workmanship or material shall constitute a fulfillment of its guarantee.

If said Dole Truck Plate should prove defective after TWO years and prior to the lapse of THREE years, the Company will replace said Dole Truck Plate for 45% of prices in effect at time of exchange, and if said Dole Truck Plate shall become defective at the end of THREE years and prior to the lapse of FOUR years, the Company will replace said Dole Truck Plate for 60% of prices in effect at time of exchange, and if said Dole Truck Plate shall become defective at the end of FOUR years and prior to the lapse of FIVE years, the Company will replace said Dole Truck Plate for 75% of prices in effect at time of exchange.

DOLE REFRIGERATING COMPANY



Specifications Subject to Change Without Notice

DOLE REFRIGERATING COMPANY

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