



VACUUM PROCESSING EQUIPMENT

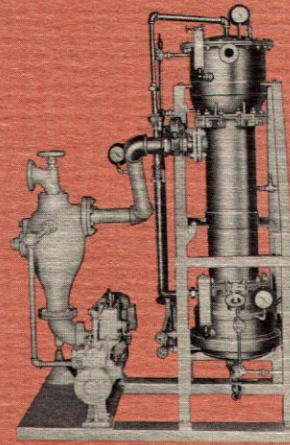
Vacuum Pan
with Vacuum Pump



Vacuum Kettle



Research Unit
This special design provides
Atmospheric or Pressure Cooking
and Vacuum Processing



Vacuum Brining Tank



LEE Vacuum Processing Equipment is used throughout processing industries wherever volatiles must be removed from products sensitive to high temperatures and prolonged processing treatments. Choose standard units of several designs or units made to your specifications. Capacities range from 5 to 500 gallons.

For "wet" vacuum systems, total volumetric capacity of standard units is approximately three times rated capacity to provide ample vapor space and prevent products being drawn into the vapor line. "Dry" vacuum systems are designed with characteristics required by product and process.

All LEE Vacuum Processing Equipment with steam jackets is designed for 50 psi jacket pressure assuming that higher pressures (temperatures) are undesirable. Designs are based on internal conditions of complete vacuum or 15 psi pressure.

To determine the size of Vacuum Processing Equipment required it is necessary to know (1) the size of the finished batch desired and (2) the amount of moisture or other volatiles to be removed. In food products derived from natural fruits and vegetables, moisture content as received may vary considerably. Chemical products on the other hand, are compounded to eliminate this variable. In either case, selection of size must be based on the maximum load.

Basic operation usually involves preheating product to the boiling point corresponding to the vacuum to be drawn. This is approximately 125° F. for 26" Hg. Similarly, reheat after vacuum processing also may be

required. Either or both preheat and reheat operations may be accomplished in auxiliary equipment or in vacuum equipment itself.

Certain chemicals, some cosmetics and all food concentrates require agitation. Supplemental heat from a steam coil will produce a rolling action during the final stages as product becomes more viscous. Some products are agitated best by means of mechanical agitators of scraper, anchor or propeller type selected to suit specific conditions.

Vacuum, measured in inches of mercury, is a function of atmospheric pressure. A perfect vacuum at sea level is considered to be 30" Hg. As elevation increases, atmospheric pressure decreases, so that at an altitude of one mile, a perfect vacuum is less than 25" Hg., and at any altitude it is correspondingly less than at sea level. Your study of vacuum processing, therefore, should be on the basis of absolute pressure rather than vacuum.

Consult LEE on equipment for any Vacuum Process.
A.S.M.E. Code Construction Available.

By equipment, engineering skills, production personnel and experience . . . LEE is well qualified to produce a broad range of custom-designed processing equipment. May we quote on or discuss any special equipment you have under consideration?

VACUUM PANS

Vacuum pans are used extensively in processing jams, jellies, concentrates etc. Each processor will vary his operations to suit local conditions. The following outlines give some of the salient facts for these three types of products.

Jellies. Approximately 112 gallons of juice and sugar are required to produce 100 gallons of finished product. Raise temperature to 125 F in preheat kettle or in pan without vacuum. Draw vacuum and process until total volume is 100 gallons or proper concentration has been reached. Release vacuum and heat product to canning temperature.

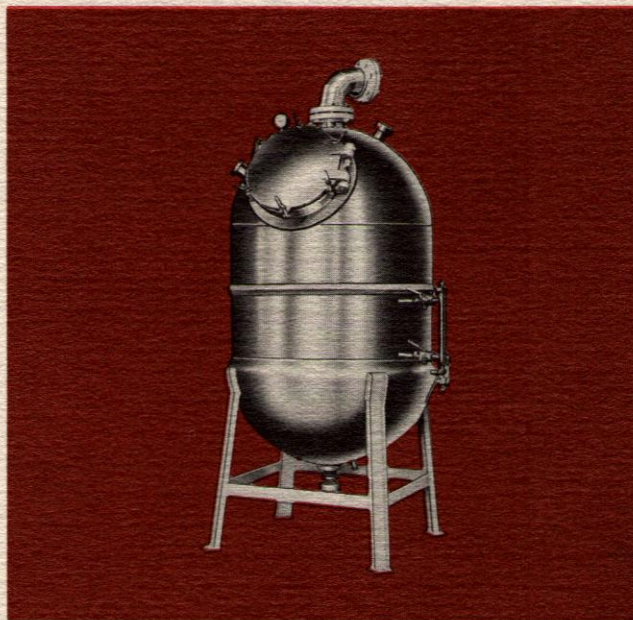
Jams and Preserves. Evaporation required is about 17%. Prepare syrup and draw into pan. Add fruit. Evaporate to proper concentration. Heat to canning temperature.

Pastes and Concentrates require booster coil in jacketed area of pan. When thickening begins, turn steam into coil, this keeps product rolling as viscosity increases. Tomato paste can be reduced in open Pulp Tanks to a Puree which then is concentrated further in the Vacuum Pan.

Above are general suggestions for operation of a vacuum process. They can be varied many ways to suit the requirements of process or product. LEE will gladly offer suggestions for your specific needs.

Standard equipment with LEE Vacuum Pans includes: stainless steel manholes, vapor elbow, product inlet, vacuum gauge, vacuum relief, safety valve on jacket and two 3-inch sight glasses. Also available are product sampler and/or Goldberg Refractometer.

A.S.M.E. Code Construction and Certificate Available.



SPECIFICATIONS

Capacity Gallons	Inside Diameter Inches	Inside Depth Inches	Floor to Dome Top Inches	Inlet I.P.S.	Outlet I.P.S.	Steam Conn. I.P.S.	Vapor Elbow Inches
10	16	23½	54	2	2	¾	2
25	24	48	67	2	2	¾	3
50	32	54	74	2	2	¾	4
75	36	64	84	2	2	¾	5
100	38	75	97	2	3	1	5
125	40	76	98	2	3	1	5
150	44	72	95	2	3	1	6
200	48	78	100	2	3	1	6
300	54	83	105	3	3	1	8
400	62	94	116	3	3	1	8
500	68	96	118	3	3	1	8

EVAPORATING CAPACITIES

Capacity Gallons	Heating Area Square Feet	Evaporation Gal./Hour	Boiler H.P. Required	Cooling Water* G.P.H.—26" Vacuum		
				60°	70°	80°
10	2	31	2	200	240	320
25	5.5	36	5	500	600	800
50	11	44	11	910	1145	1525
75	12.5	50	13	1035	1295	1725
100	14	56	14	1170	1460	1945
125	15.75	63	16	1300	1620	2160
150	19	76	19	1520	1900	2640
200	23	92	23	1910	2400	3180
300	29.5	118	30	2450	3060	4080
400	39	156	39	3240	4050	5400
500	47.5	190	48	3960	4950	6600

Standard 10 gallon unit has 5" Hand Hole access. 25 gallon unit has side mounted 18" manhole. All standard units 50 gallon capacity and larger have 18" manholes mounted in top dome.

Based on using steam pump and jet condenser to produce vacuum.



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