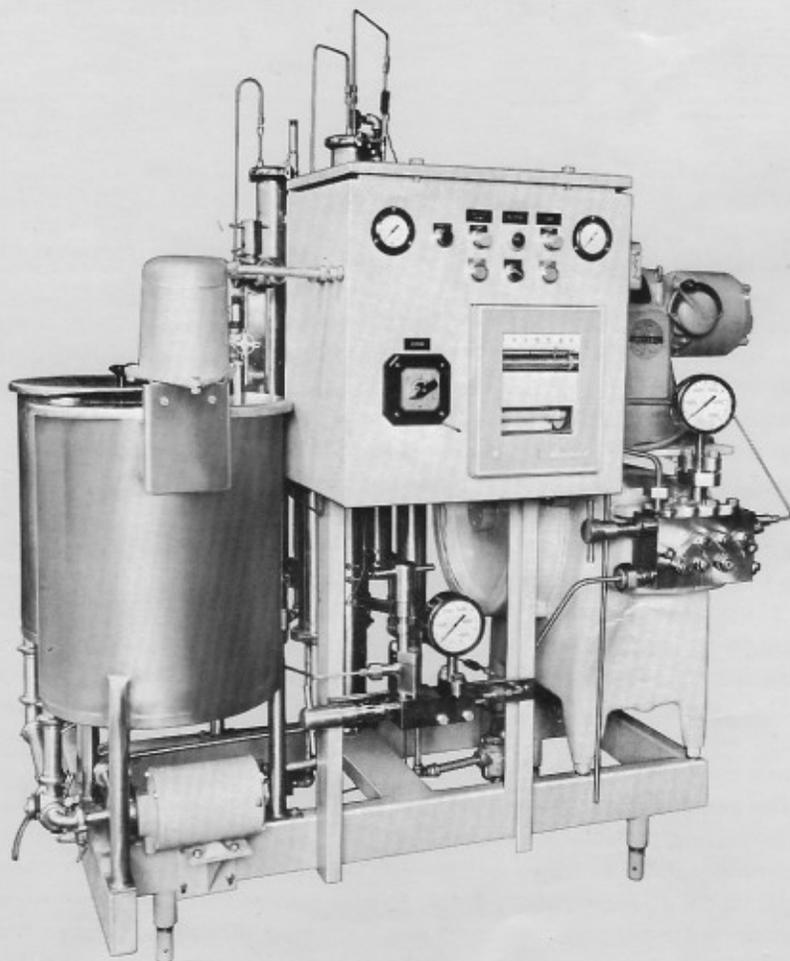
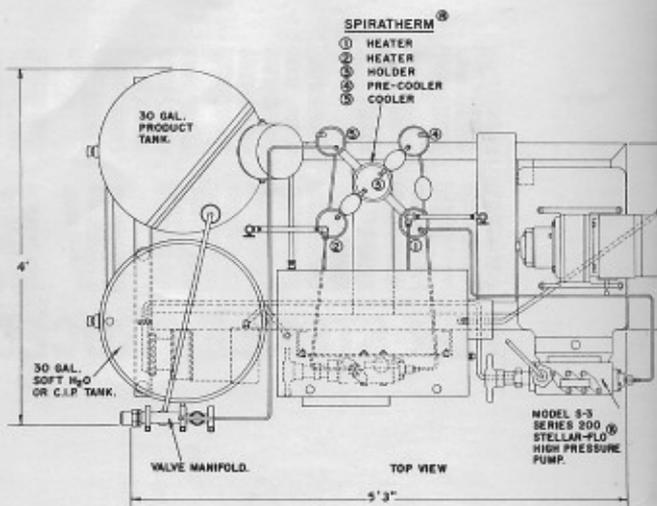
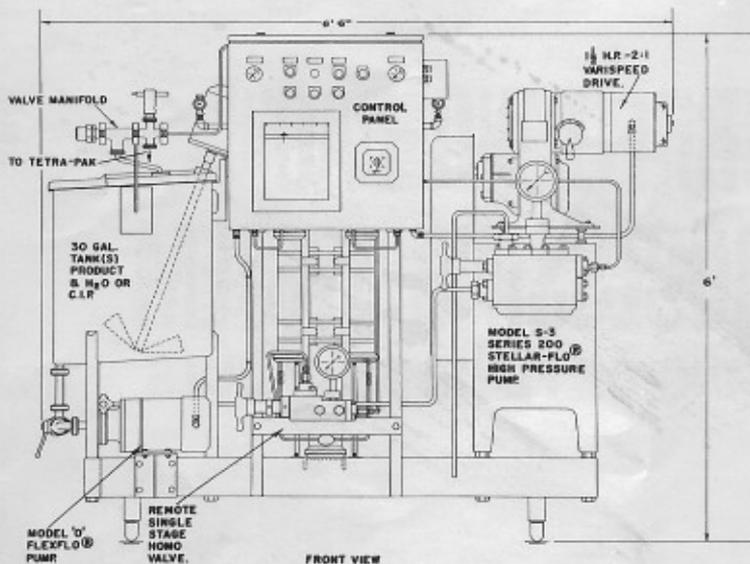


# NEW CHERRY-BURRELL "NO-BAC"\* UNITHERM IV PROCESSING SYSTEM FOR STERILE PROCESSING OF FLUID PRODUCTS

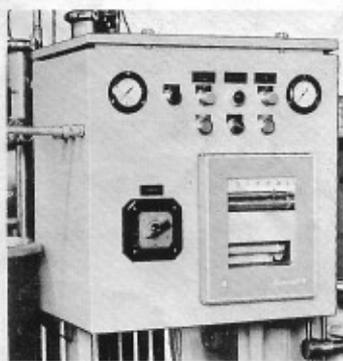


- **PRODUCES STERILE PRODUCT**—Unitherm "No-Bac" processing protects product from contamination during processing . . . sealed from input to output.
- **EASY TO OPERATE**—Complete with a centrally located control panel equipped with all necessary gauges and switches. Includes warning device to signal operator if pre-set sterilizing temperature is not maintained.
- **COMPACT**—Complete self-contained unit that saves floor space and installation . . . simply requires bringing the utilities to it. No auxiliary valves, fittings or tanks required.
- **INCREASES PROFIT**—Increases shelf life of the product . . . minimizes returns due to spoilage.
- **C-I-P CLEANED**—All product contact surfaces are stainless steel. Complete with built-in C-I-P solution surge tank.

\*Trademark of Cherry-Burrell Corporation



## "No-Bac" Unitherm IV simplifies sterile processing



Unitherm IV control panel has all gauges and controls in a central convenient position.

"No-Bac" Unitherm IV is a miniature, sterile processing system, complete in itself . . . includes surge tanks for both the product and the C-I-P cleaning solutions. The entire system may be sterilized before operation and because it's positively sealed, your product won't be contaminated.

In operation, product is pumped from the surge tank by a Flexflo® centrifugal pump to the Stellar-Flo® high-pressure pump. Under pressure up to 3,000 psi, the product runs through two Spiratherm® tubular heat exchangers which can heat it to 300° F. It is held at 290°-300° in a holding tube long enough for sterilization. From the holding tube, it enters a Spiratherm cooling tube which lowers the temperature to 170° F. (range can be varied for best homogenization of product) for delivery to a single-stage homogenizing valve. After homogenizing, the product is cooled in the second Spiratherm cooler to approximately 35° F. (based on using 33° F. water at the rate of 1500 lbs. per hr.) and is piped through Unitherm's own feed line directly into the packaging equipment . . . bypassing any auxiliary tanks or pumps which can't be kept sterile during operation.

The design and engineering of the Unitherm IV have minimized chances of error in producing a bacteria-free product. This is not only apparent in the processing equipment itself but also in the centralized control panel. This panel has all the controls for the product agitator, Flexflo pump, variable speed Stellar-Flo pump and an automatic warning light and horn that indicate improper temperature at the end of the holding tube. A continuous strip chart recorder with a four position selector switch allows continual check of the product temperature as it leaves the holding tube. The three other positions on the switch permit checking the product temperature at the end of the first Spiratherm heater, the end of the second Spiratherm heater and during homogenizing. The panel also has two gauges which indicate the steam pressure in the Spiratherm heaters. In operation, the Unitherm IV allows constant check on itself and needs only periodic attention by the operator.

The system is a compact, self-contained unit and is delivered fully assembled on a painted, carbon steel base. Installation requires only to run the product line into the filler and hook up electricity, steam and water.

For more detailed information, contact the Cherry-Burrell Process Engineer in your area or write Cherry-Burrell.

Due to a constant improvement program, above specifications are subject to change without notice.



### CHERRY-BURRELL CORPORATION

CEDAR RAPIDS, IOWA

Instructions For The  
CHERRY-BURRELL CORPORATION  
NO-BAC UNITHERM IV

SECTION I - INSTALLATION

GENERAL PRINCIPLES OF MACHINE

The No-Bac Unitherm IV is a complete unitized system for sterilizing fluid products at a rate of 20 to 40 G.P.H. It consists of two surge tanks, one with agitator, supply pump, high pressure pump, spiratherm heat exchangers, aseptic remote homogenizing valve and a valve manifold. The high pressure pump has a 3000 PSI maximum pressure limitation. The spiratherm heaters have a 150 PSI maximum steam pressure limitation.

LOCATION OF MACHINE

The Unitherm IV should be installed as close to the filling machine as is practical to minimize the length of lines that need to be sterilized. Twenty feet of 1/4" tubing is supplied for connection to filler. The legs are adjustable for leveling of the platform.

FACTORY ASSEMBLY

Factory assembly includes:

1. All electrical connections from control box to motors and thermocouples.
2. All product lines between components on the frame.
3. Both steam valves and steam traps.

FIELD ASSEMBLY (SEE PIPING INSTALLATION DRAWING)

STEAM LINES - Steam should be supplied to the unit at a constant regulated pressure of 75-80 PSIG. The main line should be a 1" pipe. This line should be divided as follows:

- a. 1/2" line - to second heater valve.
- b. 1/2" line - to first heater valve.
- c. 1/4" line - to 1/4" valve - to steam gauge - to aseptic remote valve. This can be 1/4" copper tubing. Each of these two seals should have a 1/4" copper tube discharge.

CITY WATER - City water should be supplied to:

1. First cooling tower
2. To high pressure pump.

This is shown on piping installation drawing.

REFRIGERATED WATER - Should be supplied to final cooler as shown on piping installation drawing.

SOFT WATER - Soft water is preferred for the sterilizing cycle. This water should be piped to the surge tank that has no agitator.

Cherry-Burrell Corporation  
Cedar Rapids, Iowa

ELECTRICAL - Two electric lines should be connected to the control box as shown on electrical diagram.

1. 110 Volt, 60 Cycle, One Phase
2. 220 Volt, 60 Cycle, Three Phase

#### MOTORS

ON SUPPLY PUMP: ----- 1/2 H.P. - 3/60/220, 3450 R.P.M.

ON HIGH PRESSURE PUMP: - 1 1/2 H.P. - 3/60/220 On Varidrive 2:1 Ratio  
780/390 R.P.M. Correct rotation as shown by arrow  
on driven pulley is important. Do not run in reverse.

ON AGITATOR ----- 1/60/220 - 1800 R.P.M. Motor, Countershaft Speed -  
30 R.P.M., Automatic Reset Thermal Overload Protecto

#### PREPARATION FOR TEST RUN

BEFORE STARTING ANY MOTORS OR OPENING ANY STEAM TO JACKETS:

1. Drain both cooling towers and leave drain open.
2. Start water on pump plungers.
3. NEVER stop pumps while steam is on heaters.
4. Do not allow air to enter system while operating. Always supply water or product to pumps while operating.
5. Open remote homogenizing valve.
6. Open relief valve on high pressure pump.

#### INITIAL TEST RUN AND STERILIZATION

Before processing any product go thru following procedure using water only and no homogenization pressure. This is to be performed once before actually processing with unit.

(SEE DRAWING OF PIPING INSTALLATION)

Turn plug valve to supply soft water to supply pump. Start supply pump. When water is flowing from high pressure relief valve start high pressure pump. When air is purged from system tighten relief valve only enough to stop flow. Adjust high pressure pump speed to deliver desired flow rate. When water is discharging from valve manifold set homogenization pressure at remote valve. Close 60CT (L) Valve so that water flows thru 60RTT Valve (M).

Turn on power to temperature recorder. Set temperature selector to #1 Thermocouple. Open steam valve on #1 Heater to get temperature of 180°-190° at #1 Thermocouple. Note steam pressure to get desired temperature. Switch selector to #2 Thermocouple. Open steam valve on #2 Heater to get 300°-310° on #2 Thermocouple. Maintain steam pressure on #1 Heater. Open valve supplying steam to remote valve and adjust to 30 PSIG on gauge. Steam should be blowing from each seal. Ends of copper tube should be pinched down to maintain back-pressure but allow flow of steam.

Set temperature selector to #4 Thermocouple. Timing of the sterilizing cycle begins when #4 Thermocouple reaches 300° F. After 20 minutes at 300° or above, cool water to 200° F. (at #4 Thermocouple) and let flow to filler by opening No. 60T Valve. Water may be run for 1 - 2 minutes to flush transfer line. If cooling of Tetra Pak is excessive water may be packaged as cream normally is.

When this is completed the temperature of Thermocouple #3 (at end of hold) should be maintained and never fall below a minimum sterilizing temperature. If the temperature falls below the minimum temperature it is necessary to repeat the 20 minute cycle with temperature #4 at 300° F. When the temperature falls below the minimum the alarm will sound which is shut off when the acknowledge button is pushed. (NOTE that the back-set switch in the temperature recorder can be adjusted - see manual)

When sterilization cycle is completed start cooling water to the first cooler. Close vent valve. Adjust flow to get desired homogenizing temperature by adjusting the drain valve.

Start refrigerated water to final cooler. Close vent valve and drain valve. Adjust flow to get desired filling temperature.

The temperature selector should be set at Thermocouple #3 except when taking periodic readings of #1, #2, and #4. Note that alarm will sound on #1 and #4. Acknowledge this and continue. Alarm situation is of concern on Thermocouples #2 and #3 only.

## SECTION II - OPERATION

TO START CREAM RUN - Cream is to be supplied in tank with agitator. After water heating and cooling temperatures have leveled out at desired temperatures turn plug valve on cream tank to expel air from line and fill with cream.

Turn plug valve on water tank to stop water flow and start cream flow. Time to flow thru system is about 45 seconds at 30 GPH but should be timed at particular flow rate and recorded for future use in start ups and switching products.

VALVE MANIFOLD - Two sanitary valves (see drawing of Valve manifold) mounted on side of tank at end of system. When 60CT Valve is closed the product is being diverted thru 60RTT Valve and may be returned to either tank or to the floor. When 60 CT Valve is open, product is in forward flow to the filler.

If the filler is not operating you should:

- a. If the filler is shut down for a short time divert the product back to product supply tank or;
- b. If the filler is to be shut down for a relatively long time divert product back to product supply tank and turn plug valve to supply water to system. After calculated time to flow thru system divert water to the water supply tank or to drain.

NOTE that one full turn open on the No. 60CT valve is sufficient for the low flow rates and speeds up operation when changing to divert flow.

## FLOW RATE

The flow rate can be adjusted to control the amount of fill for each package by varying speed of high pressure pump.

CLEAN UP - Customer should contact chemical supplier for chemicals that will clean the unit. It is the responsibility of the customer to use chemicals and procedures that will not deteriorate the equipment. When finished processing product, switch plug valve to supply water to system. Divert all valve manifold to drain. Open remote homogenizing valve and shut off steam to #2 heater. Maintain 165° - 170° out of first heater. Shut off cooling water to both coolers and open drain valves.

When rinse water is clear, divert water to water supply tank. With about 4" of water in tank add caustic solution to this water. Circulate for 20 minutes at about 170°F. Rinse with water and circulate acid solution for 20 minutes. Rinse with water. Shut off steam and flush until temperature is below 120°F.

## STOPPING UNIT

Open relief on high pressure pump. Push stop button on homo. Push stop button on supply pump. Remove plugs from plug valves, rinse tanks and allow to dry.

## FINAL CLEAN-UP

When unit is shut down -

Disassemble high pressure pump product contact surfaces and remote homogenizing valve for hand cleaning.

## SECTION III - MAINTENANCE

Refer to the Instruction Manuals covering the High Pressure Pump, and Flexflo Pump for recommended maintenance procedures. Maintenance of oil level in high pressure pump gearcase is vitally important!

## RECOMMENDED SPARE PARTS

1. See High Pressure Pump manual for seals and gaskets to have on hand.
2. See Remote homogenizing valve parts list page for seals, caps, and gaskets to have on hand.
3. See Flexflo Model OH Pump manual for seals to have on hand.
4. Strip chart for Temperature Recorder.
5. Fuses - 10 Amp - 220 Volt ----- 2 used.  
- 3 Amp - 110 Volt ----- 1 used.
6. Gaskets - #100-7400 - 40QH -1 1/2" x 1" - 1 used  
#400-6800 - 40QT -1" - 11 used  
#400-6801 - 40QT -1 1/2" - 1 used  
#400-6914 - 40IT -3" - 6 used  
#400-6915 - 40IT -4" - 4 used