

Filtrine

BAKERY CHILLERS

BATCH DRAW INGREDIENT WATER • JACKET WATER
INGREDIENT & JACKET WATER COMBINATION



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FILTRINE HAS THE ADVANTAGE

Super-chilled 34° ingredient water for consistent dough temperatures year-round

DOUGH CAN BE CHILLED IN THE MIXER IN SEVERAL WAYS

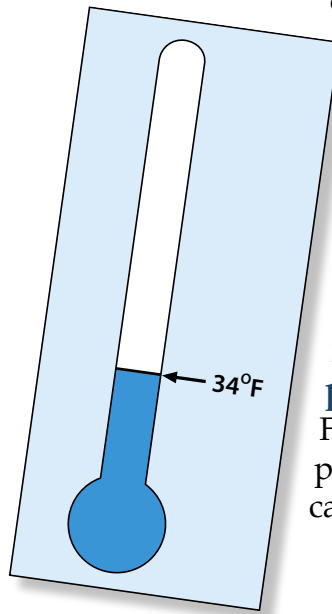
- 1 Ice added to ingredient water**
This method is unsanitary, requires extra labor, ice is expensive, ice makers require extra servicing, measuring is inexact, resulting in potential temperature fluctuations.
- 2 Direct expansion cooling**
Jacket of mixer is chilled by refrigerant lines. Problems with this method include no reliable temperature control, localized cold spots on jacket cause freezing of dough to mixer wall [reducing heat transfer], dough in middle of mixer remains warm and a significant potential for refrigerant leaks.
- 3 Chilled water runs through mixer jacket**
An improvement over direct expansion cooling, but not without problems; uneven heat transfer to core of the mixer and jacket area inadequate to cool dough.
- 4 Chill ingredient water before adding to mixer**
34° water cools all dough instantaneously and uniformly, no labor costs, completely sanitary and least expensive.
- 5 Combination of methods 3 and 4.**
Chill ingredient water to 34° and circulate chilled water through mixer jacket. Cools dough instantly and maintains cold temperature while in mixer.

FILTRINE CHILLERS HAVE BAKERY-SPECIFIC ADVANTAGES

Uniform temperature during entire batch
Storage-type cooling tank with immersion coil evaporator insures 34° water for use during entire batch.

The Filtrine design prevents warm makeup water from mixing with chilled water... ensuring constant water temperature to each batch.

Safe, heavy duty design proven over time
Filtrine was chosen to the supply chiller solution to field mess camps during WWII.



FOOD GRADE WATER FOR THE BEST-TASTING BAKED GOODS

Makeup water is often less than perfect in purity and/or taste. Filtrine has options to solve these problems.

TASTE MASTER® PURIFIER on makeup water line removes sediment, chlorine taste, odor and volatile organic compounds [VOC]... polishes water for perfect clarity.

STERI FLO® UV STERILIZER on makeup water line kills water borne pathogens including Bacteria, Giardia, Cryptosporidium, Algae, Spores, Viruses, etc.



FILTRINE IS ISO 9001:2015 CERTIFIED
PRODUCT LINE APPROVED MARK AVAILABLE



ENERGY SAVING OPTIONS

Engineered to reduce chiller operating costs
Contact Filtrine for details

BATCH DRAW INGREDIENT WATER CHILLERS



UNIFORM BATCH TEMPERATURE FROM FIRST DROP TO LAST

Through their unique design principle and superior construction Filtrine chillers have become standard throughout the industry for dependable uniformity in ingredient batch-draw water cooling. Unlike instantaneous chillers which are in constant danger of freeze-up at temperatures below 45°F [7°C], Filtrine chillers are specially designed with high-transfer immersion coil evaporator and large holdover storage to supply ingredient water at 34°F [1°C] and to maintain temperature setting within $\pm 1.5^\circ\text{F}$ [$.8^\circ\text{C}$].

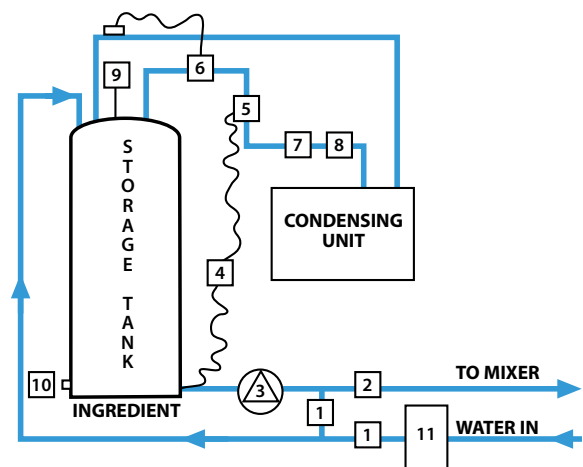
This important storage feature not only provides a large volume of chilled water for dough; it also acts as a refrigeration "cushion," preventing overload and "short cycling" common to chillers without storage.

BATCH DRAW OPERATION

Flow-activated solenoid valves permit the tank to be filled and internally agitated to prevent freezing at low temperatures. When metering valve at the mixer calls for chilled water, up to 75% of the storage capacity is pumped out at the rate of 10-50 gpm. Solenoid valves automatically shut off the intake to prevent a mixture of incoming water with the batch so that water temperature is uniform from the first gallon to the last.

When the required amount is drawn, the flow switch reverses the solenoids to refill the storage tank and return the pump to internal agitation until the next batch is required.

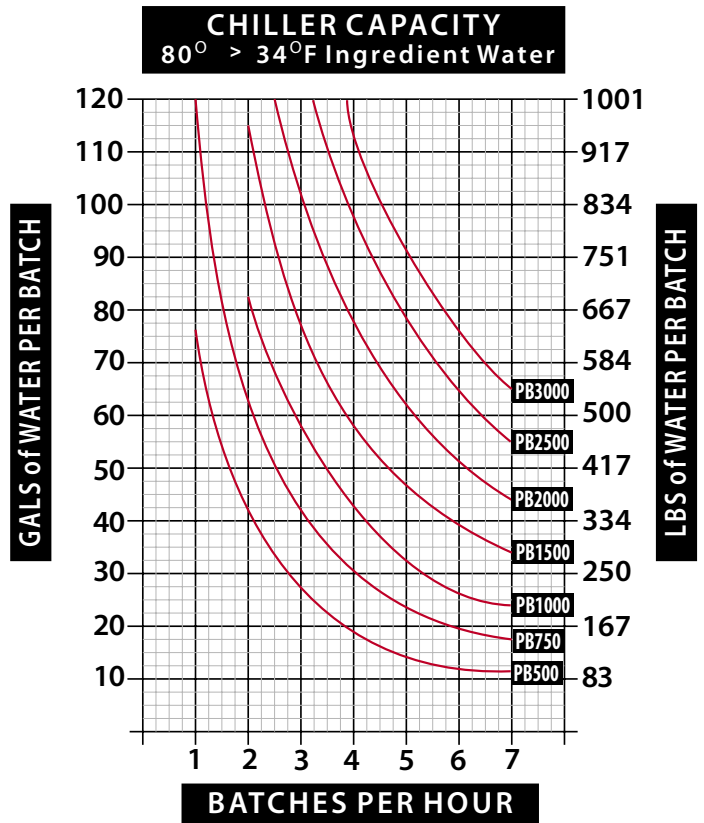
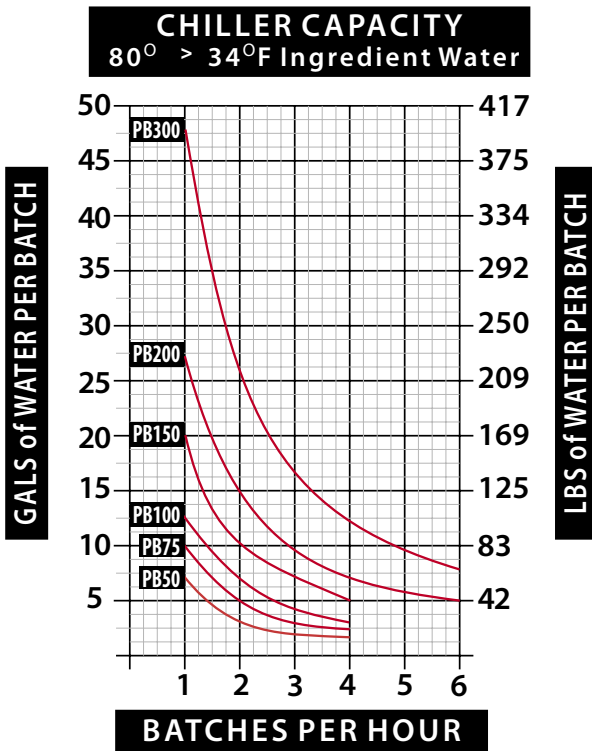
BATCH DRAW CHILLER SCHEMATIC



LEGEND

- | | |
|------------------------|------------------------|
| 1 Solenoid [norm open] | 6 Expansion valve |
| 2 Flow switch | 7 Sight glass |
| 3 Circulating pump | 8 Dehydrator |
| 4 Thermostat | 9 Automatic air vent |
| 5 Refrigerant solenoid | 10 Drain |
| | 11 Purifier [optional] |

BATCH DRAW INGREDIENT WATER CHILLER - SPECS



BATCH DRAW CHILLER SELECTION CHART								
FILTRINE MODEL No	COMP HP	PUMP HP	DIMENSIONS - INCHES *			STORAGE GAL	TASTE MASTER PURIFIER	STERI-FLO STERILIZER
			W	D	H			
PB-50	1/2	1/3	30	28	48	20	IL5-PFTM	S-5
PB-75	3/4	1/3	30	28	52	25	IL5-PFTM	S-5
PB-100	1	1/2	30	28	60	30	IL10-PFTM	S-15
PB-150	1-1/2	1/2	30	28	70	42	IL10-PFTM	S-15
PB-200	2	1/2	30	28	84	50	IL10-PFTM	S-15
PB-300	3	3/4	40	34	84	94	IL15-PFTM	S-15
PB-500	5	1	90	35	60	100	IL20-PFTM	S-30
PB-750	7-1/2	1	102	39	80	160	IL20-PFTM	S-30
PB-1000	10	1-1/2	90	54	70	200	IL20-PFTM	S-30
PB-1500	15	2	90	60	84	250	IL35-PFTM	S-60
PB-2000	20	2	120	82	80	375	IL35-PFTM	S-60
PB-2500	25	2	112	54	84	500	IL70-PFTM	S-120
PB-3000	30	3	106	62	88	500	IL70-PFTM	S-120

* Dimensions for self-contained air cooled units. Dimensions for water cooled, remote air cooled and optioned units will vary.

NOTE: TasteMaster Purifier and Steri-Flo Sterilizer are OPTIONAL EXTRAS

JACKET WATER CHILLERS



FAST RECOVERY AND COMPACT DESIGN

FILTRINE engineering features fast recovery and compact design combined with storage which make Filtrine chillers the preferred system for cooling a jacketed mixer.

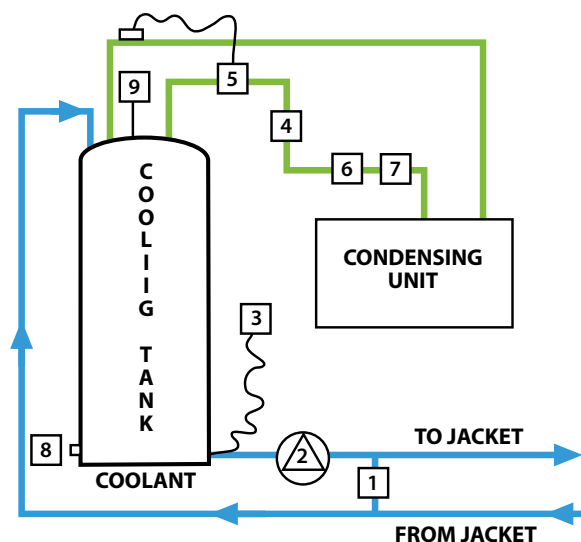
High transfer coil supplies large hourly capacity, while the vital storage reserve provides a balance against temperature swing. This insures accurate control at any flow rate which prevents overload and short cycling of the machine.

Standard construction includes stainless steel cooling tanks with stainless steel immersion coil evaporator, water or air cooled condensers, stainless steel pump, white epoxy or stainless steel cabinet and full controls for automatic operation.

OPERATION

The Jacket Chiller is designed to operate continuously, circulating a water and glycol mixture between the chiller and mixer jacket to extract heat generated by high-speed mixing and maintain proper dough temperature during the mixing process. Temperature of water glycol solution circulating through the jacket is 15°F to 35°F as selected.

JACKET CHILLER SCHEMATIC



LEGEND

- | | |
|------------------------|-------------------|
| 1 By-pass valve | 5 Expansion valve |
| 2 Circulating pump | 6 Sight glass |
| 3 Thermostat | 7 Dehydrator |
| 4 Refrigerant solenoid | 8 Drain |
| | 9 Manual air vent |

JACKET WATER CHILLER - SPECS

LBS OF DOUGH PER MIX	WATER PER MIX		NUMBER OF MIXES PER HOUR	RECOMMENDED JACKET WATER CHILLER AT REQUIRED WATER / GLYCOL TEMPERATURE*			
	LBS	GAL		35°F	30°F	25°F	20°F
350	120	15	1	PCP-50AL	PCP-50AL	PCP-50AL	PCP-50AL
			2	PCP-75AL	PCP-75AL	PCP-75AL	PCP-100AL
			3	PCP-100AL	PCP-100AL	PCP-150AL	PCP-150-19AL
			4	PCP-150-19AL	PCP-150-19AL	PCP-200-27AL	PCP-200-27AL
450	150	18	1	PCP-75AL	PCP-75AL	PCP-75AL	PCP-100AL
			2	PCP-100AL	PCP-100AL	PCP-100AL	PCP-150-19AL
			3	PCP-150-19AL	PCP-150-19AL	PCP-150-19AL	PCP-200-27AL
			4	PCP-200-27AL	PCP-200-27AL	PCP-200-27AL	PCP-300-38AL
540	180	22	1	PCP-75AL	PCP-75AL	PCP-100AL	PCP-100AL
			2	PCP-100AL	PCP-100AL	PCP-150-19AL	PCP-150-19AL
			3	PCP-150-19AL	PCP-150-19AL	PCP-200-27AL	PCP-200-27AL
			4	PCP-200-27AL	PCP-200-27AL	PCP-300-38AL	PCP-300-38AL
720	240	30	1	PCP-100AL	PCP-100AL	PCP-100AL	PCP-150-19AL
			2	PCP-150-19AL	PCP-150-19AL	PCP-150-19AL	PCP-200-27AL
			3	PCP-200-27AL	PCP-200-27AL	PCP-300-36AL	PCP-300-38AL
			4	PCP-300-38AL	PCP-300-38AL	PCP-300-38AL	PCP-500-62AL
900	300	38	1	PCP-100AL	PCP-100AL	PCP-100AL	PCP-150-19AL
			2	PCP-200-27AL	PCP-150-19AL	PCP-200-27AL	PCP-300-38AL
			3	PCP-300-36AL	PCP-200-27AL	PCP-300-38AL	PCP-500-62AL
			4	PCP-300-38AL	PCP-300-38AL	PCP-500-62AL	PCP-500-62AL
1100	370	48	1	PCP-150-19AL	PCP-150-19AL	PCP-150-19AL	PCP-200-27AL
			2	PCP-200-27AL	PCP-200-27AL	PCP-300-38AL	PCP-300-38AL
			3	PCP-300-38AL	PCP-300-38AL	PCP-500-62AL	PCP-500-62AL
			4	PCP-500-62AL	PCP-500-62AL	PCP-750-98AL	PCP-750-98AL
2200	740	92	1	PCP-200-27AL	PCP-200-27AL	PCP-300-38AL	PCP-300-38AL
			2	PCP-500-62AL	PCP-500-62AL	PCP-750-98AL	PCP-750-98AL
			3	PCP-750-98AL	PCP-750-98AL	PCP-1000-140AL	PCP-1000-140AL
			4	PCP-1000-140AL	PCP-1000-140AL	PCP-1500-180AL	PCP-1500-180AL

* **NOTE:** Mixer designs vary. Exact cooling requirements should be confirmed with factory after completing our Bakery Chiller Questionnaire.

INGREDIENT/JACKET WATER COMBINATION CHILLERS



SAVE ENERGY AND SPACE

For space-saving efficiency and economy the Ingredient and Jacket Water chillers can be combined into one unit. PB models can be paired with PCP units of balanced capacity to provide PBC models in one, compact housing.

The combination Ingredient and Jacket Water chiller includes separate cooling circuits, each with its own compressor and individual controls. These circuits can be operated separately when needed.

All combination chillers are constructed of the same heavy duty components as the individual Ingredient and Jacket chillers mounted in a cabinet of enameled aluminum panels with stainless steel corner legs and top on a welded angle iron frame. Panels removable for access to all components.

COMBINATION CHILLER - SPECS

INGREDIENT/JACKET WATER COMBINATION CHILLER SPECIFICATIONS

MODEL NUMBER	INGREDIENT UNIT			JACKET UNIT			APPROX DIMS - INCHES		
	COMP - HP	PUMP - HP	STORAGE - GAL	COMP HP	PUMP HP	STORAGE - GAL	W	D	H
PBC-150	1	1/2	20	1/2	1/4	10	72	34	60
PBC-200	1-1/2	1/2	30	3/4	1/3	12	72	34	64
PBC-300	2	1/2	50	1	1/3	20	82	34	68
PBC-500	3	3/4	100	1-1/2	1/3	25	96	38	70
PBC-750	5	1	100	2	1/2	50	90	42	74
PBC-1000	7-1/2	1	160	3	1/2	100	96	42	80
PBC-1500	10	1-1/2	200	5	1/2	100	90	50	86
PBC-2000	15	2	300	7-1/2	3/4	100	CONSULT FACTORY		
PBC-3000	20	2	400	10	3/4	100			

NOTE: Combination chillers can be equipped with PURIFIER on Ingredient Unit. *Please consult factory.*

NOTE: Other combination chiller configurations are available. *Please consult factory.*

"FOOD GRADE" INGREDIENT WATER

FILTRINE TASTE MASTER® PURIFIERS

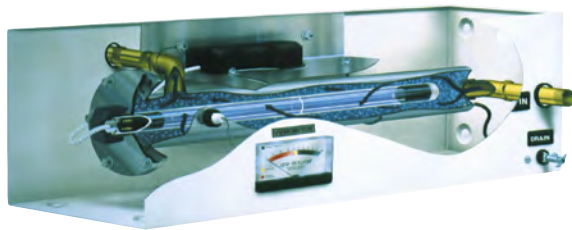
All Ingredient Water Should Be Purified

Water with the best taste, no odors or sediment will produce highest quality dough. The best city water is seldom free from such impurities - sometimes due to heavy chlorination, water-line disturbances, old and rusty pipes, etc.

A Filtrine Taste Master Purifier on every ingredient cooler provides water of perfect taste and clarity at all times - removes even chlorine and other tastes and odors . . . banishes all impurities that affect the taste of bakery products.



TYPICAL IN-LINE
TASTE MASTER
PURIFIER



UV STERILIZER UNIT

Cut-away illustration showing UV tube, quartz sleeve, sensor and exposure meter.

STERI FLO® UV STERILIZERS

Kill bacteria without chlorine or other chemicals and therefore have no cancer-causing by-products. They are recommended as an alternative to chlorine treatment where cryptosporidium and other microorganisms may be retained in the bio-film on the walls of city water mains.

In Steri Flo sterilizers, UV radiation with a wavelength of 2,536 angstrom is produced from a low pressure mercury lamp. The lamp is encased in a special high-purity quartz sleeve which is immersed in water inside of the stainless steel sterilizing chamber.

Filtrine's Steri-Flo UV system insures safe water is going into your mixes.

OPTIONS and ACCESSORIES

COMPONENTS

BLOWER: Built into cabinet for ducting hot air out of building.

DUAL PUMPS: Provide complete backup. Available with automatic switchover in case of failure.

FREE COOLING: Uses a fluid cooler installed outdoors to assist or replace the chilling unit during low ambient conditions.

HIGH AMBIENT: Designed for up to 120°F.

IN-LINE FILTER: Removes sediment from makeup ensuring clean liquids.

PURE SYSTEM: For deionized water or other liquids requiring isolation from copper or brass. Evaporator fabricated from 304 stainless steel [316 available] with poly piping and fittings.

REMOTE AIR COOLED CONDENSER: Ready for remote installation on roof. [See ENERGY ECONOMIZER option]

WATER COOLED CONDENSER: For hookup to city or tower water. [See ENERGY ECONOMIZER option]

CONTROLS

DIAL THERMOMETER: For makeup and/or discharge temperature.

ENERGY ECONOMIZER: Increases rate of refrigeration and reduces energy usage during low ambient conditions for outdoor or split units. Available on water cooled units also.

FLOW METER: Mounted on discharge line.

FUSED DISCONNECT SWITCH: On power supply.

HIGH/LOW TEMPERATURE INTERLOCK: In-line sensor wired to warning device of unit, prevents damage in event of chiller breakdown. Warning activated when chiller exceeds high/low temperatures, signifying compressor failure.

LOW FLOW INTERLOCK: In-line sensor wired to warning device of unit; activated upon low flow, signifying pump failure.

LOW PRESSURE INTERLOCK: In-line sensor wired to warning device of unit; activated upon low flow, signifying pump failure.

PROGRAMMABLE LOGIC CONTROLLER: Controls all process functions and monitors operating parameters and alarms to a local or remote readout panel. Interface with building monitoring system also available.

PRESSURE GAUGE: For makeup and/or discharge pressure.

SOLID STATE CONTROLS/DIGITAL INDICATORS: For temperature, pressure, flow, remote control panels, recorders, etc.

CABINETRY

OIL TIGHT ENCLOSURES: NEMA 12 external electrical enclosures.

RUBBER CASTERS: For complete mobility.

STAINLESS STEEL CABINET: Cabinet and frame constructed throughout of stainless steel.

WASH DOWN CABINET: Cabinet constructed as a water-resistant model to permit complete unit wash down.

FILTRINE BAKERY CHILLER REQUEST A QUOTE

NOTE: Fill out online at the Filtrine website: www.filtrine.com

Filtrine manufactures chillers for bakery ingredient and mixer jacket cooling, as well as filters and ultraviolet sterilizers for ingredient water purification. Please indicate what type of equipment you need as follows:

Ingredient Water Chiller **Jacketed Mixer Chiller** **Ingredient Water/Jacketed Mixer Combo Chiller**

A. Total number of mixers supplied by chiller [_____] / Mixer brand[s] and model[s] _____

B. Batch Information

MIXER	WATER per BATCH			FLOUR per BATCH		BATCHES per HOUR	MIXER HP *	
	lb	gal	kg	lb	kg		HIGH SPEED	LOW SPEED
No. 1								
No. 2								
No. 3								

* Needed only for Jacket water chiller

C. For ingredient water chiller

1. Make up water temperature - maximum [_____] [°F][°C]
2. Desired temperature of ingredient water [_____] [°F][°C]
3. Water filter or sterilizer desired? Yes No

D. For Jacket water chiller

1. Running time per batch for each mixer motor
 - Mixer No. 1 high speed [_____] minutes / Low speed _____ minutes
 - Mixer No. 2 high speed [_____] minutes / Low speed _____ minutes
 - Mixer No. 3 high speed [_____] minutes / Low speed _____ minutes
2. Incoming flour [or sponge] temperature - maximum [_____] [°F][°C]
3. Desired final dough temperature [_____] [°F][°C]
4. Desired Jacket water / glycol temperature [_____] [°F][°C]
5. Glycol / Jacket water percent [_____]

E. Power Available: Volts [_____] Hertz [_____] Phase [_____]

F. Space limitation, if any [inches]: Width [_____] Depth [_____] Height [_____]

G. Condensers - four types available:

- Self-contained chiller and condenser indoors: Air or Water cooled
- Self-contained air cooled chiller outdoors [NOTE: weather-resistant is not avail. for ingredient water chillers where ambient temperature gets below freezing].
- Split system: Chiller indoors, air cooled condenser outside [remote condenser].
 - Ambient Temp for air cooled condensers: _____ [°F][°C] Maximum _____ [°F][°C] Minimum _____
 - Altitude above sea level _____ [ft.] [mtr.]

CONTACT INFORMATION

NAME _____

COMPANY NAME _____

STREET ADDRESS _____

CITY _____

STATE _____

ZIP _____

PHONE _____

EMAIL _____

FAX _____