



Since 1901

PROCESS LIQUID CHILLERS



Heat Removal Solutions For Industrial
Equipment and Process Applications



Chillers Engineered To Meet Your

Recently, Filtrine celebrated its 100th anniversary. Understandably, we are proud of our past and of our reputation around the world as the manufacturer of highest quality chillers for process applications. Not content to "rest on our laurels", we continue to engineer the highest quality, most rugged chillers utilizing advanced technology... made in the USA with pride!

A LONG HISTORY OF INNOVATION

Filtrine's unprecedented stability and longevity can be traced to its ownership, and its dedication to quality. Founded in 1901, it is now a fourth generation family firm and has outgrown plants in Brooklyn, NY, Waldwick, NJ and Harrisville, NH.

The company, now headquartered in Keene, NH has changed and grown to meet the new demands of technology over these 100 plus years, but all along we have maintained our dedication to problem solving, our commitment to quality and "rapid response" service. Consider the following examples:

OUR FIRST WATER COOLER

In 1925 we designed and built one of the first electric coolers, and introduced the storage-type cooling tank still featured on all Filtrine chillers. This coil-in-tank evaporator proved to be virtually freeze-proof, a feature which appealed to major compressor manufacturers such as Carrier, York and Frigidaire who began specifying Filtrine cooling tanks with their condensing units.

OUR FIRST PROCESS COOLER

During the 1930's and 40's Filtrine entered the field of process cooling, developing the first packaged units for film processing and dough making. Many of these units are still in operation today.

STORAGE... THE HEART OF THE CHILLER

Every Filtrine chiller since 1925 has been designed with a storage-type cooling tank. More than any other feature, this tank sets our chiller apart from all other brands. Constructed of welded stainless steel with a heavy wall evaporator coil immersed inside, Filtrine tanks are more dependable and more versatile than shell-and-tube evaporators. They can be used over a wider temperature range of both ambient (-30°F to 120°F with options) and inlet and outlet temperatures, are less prone to fouling and freeze-up and provide more accurate temperature control. And, since they are available in a wide range of cooling capacities, storage capacities and construction materials, the cooling tanks allow great flexibility in the design of Filtrine chillers to solve specific problems.

ENGINEERING THE FUTURE

Today, medical and technological fields require dependable equipment which delivers close control over heat removal. Filtrine continues to solve these chilling problems for medicine, government and industry. Whether the problem is chilling an MRI or CT Scan, gasoline for testing new Ford engines, astronauts' space suits for NASA, or the NIKE Missile guidance system for Hughes Aircraft...

Filtrine has provided the solution with fully customized engineering and options.

Every day, Filtrine chillers are being specified to solve new and complex cooling problems, and as we enter our second century, our customers can be assured that we will be here in the future to continue to meet their needs.

FILTRINE... COMMITTED TO THE U.S.A.

Our goal is to build the highest quality products using domestic parts where possible. We carefully research the source of all components to insure alignment with our Made In USA standard.



Process Cooling Requirements

Almost any industrial cooling problem can be, and probably already has been solved, with a Filtrine chiller. Quality construction and a variety of options provide dependable cooling for countless specific equipment needs and applications.

INDUSTRIAL EQUIPMENT

LASERS

Optional pure system ensures that deionized water coolant comes in contact with stainless steel or polypropylene only. Solid state controls provide temperature stability within $\pm 0.5^{\circ}\text{F}$. Ambient tracking thermostat to avoid condensation.

POWER SUPPLIES

Recirculate a clean coolant at optimum temperature and flow without fear of condensation or internal corrosion.

OZONE GENERATORS

Cooling electric arc generators. Remote off/on available.

DIFFUSION PUMPS

Remove heat from water-cooled pumps.

PACKAGING MACHINES

Quick cooling of heat-seals speeds up production of form, fill, and seal packaging machines.

VACUUM PUMPS

Recirculating heater/chillers provide complete temperature control of coolant over a range from 0° to 350°F .

CHILL ROLLS

Increase speed and dependability of paper or plastic converting, laminating, printing and waxing machines by providing accurate chill roll temperature control.

PROCESS ANALYZERS

Explosion-proof controls and motors (Group B, C & D) ensure accurate and safe operation when cooling fuels for flash point or cloud point monitoring. Stainless steel cabinet and copper coated condenser to protect against aggressive gases.

AQUATIC TANKS

Stainless steel cooling tanks and evaporators are ideal for cooling salt water or ultra pure fresh water.

COLD PLUNGES

Open loop cooling for therapy plunge or after-sauna spa.

CHAMBERS

Heater-chillers for control of air temperature in hyperbaric or environmental chambers.

ELECTRON MICROSCOPES

Recirculates a clean coolant at a constant temperature, pressure and flow.

LABORATORY EQUIPMENT

Close temperature control and pure coolant ensure accuracy of non-ferrous cooling circuits for electron microscopes, blood cooling, diffusion pumps, spectrometers, scanners, NMR magnets and many other sensitive devices.

MEASURING EQUIPMENT

Cooling for devices measuring thickness of paper or metal sheets. Protected from dirty environment by using epoxy-coated condenser, water resistant for wash down; can have water-cooled condensers using plant chilled water.

PROCESS APPLICATIONS

FOOD PROCESSING

Continuous, stainless steel, coil-in-bath heat exchanger is steam cleanable and ideal for cooling viscous foods, beverages, or distilled spirits. Filters and in-line ultraviolet sterilizers are available.

BAKERY INGREDIENT

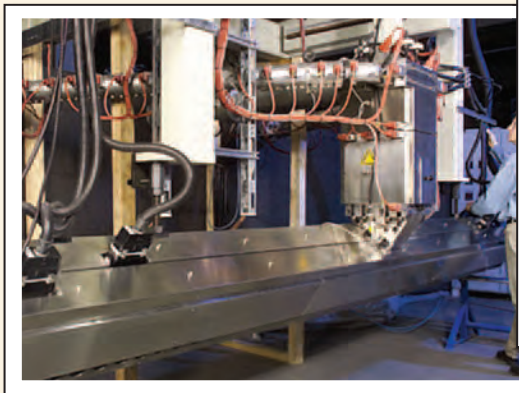
Batch draw design automatically dumps up to 500 gallons of 34°F ingredient water to ensure consistent dough-out temperatures. May include in-line filter and ultraviolet sterilizer, 6 inch stainless steel legs, wash down design, dust-proof motors and high ambient condensers.

PHARMACEUTICAL / BOILER FEED WATER

Pure systems for high-purity fluids, cooling of any liquid ingredient.

ANALYTICAL TESTING

Storage design provides safety from freeze-up and allows recirculation of clean coolant at a constant temperature, pressure and flow.



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Chiller Features and Specs

Filtrine chillers provide clean coolant at constant temperature and pressure to increase the stability and consistency of water cooled machines and instruments. Air cooled chillers eliminate the use of tap water and prevent clogging and corrosion of small diameter heat exchangers due to rust and scale build-up.

ADVANCED ENGINEERING FEATURES

- **STORAGE-TYPE COOLING TANK:** More dependable and versatile than shell and tube evaporators. Not prone to freeze-ups or clogging.
- **IMMERSION COIL IN TANK:** Provides maximum chilling for energy used and precise, close temperature control.
- **WIDE TEMPERATURE RANGE OF OPERATION:** Inlet temperatures as high as 100°F. Outlet (water) temperature as low as 34°F. Optional ambient temperatures from -30°F to +120°F available.
- **OUTLET TEMPERATURES APPLICATION SPECIFIC:** Exact match to your process requirements; temperatures held to ±0.5°F (closer temperature control available).
- **GLYCOL-FREE OPTION:** Eliminates expensive, messy and environmentally unsafe glycol with in-line heater and circulating pump connected to UPS standby power.

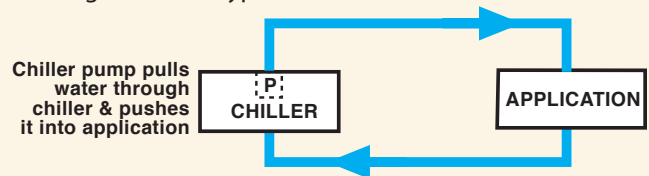
CHILLER SPECIFICATIONS

- **COOLING TANK:** Welded stainless steel plate - tested @ 250psi for 125psi working pressure. Insulated with closed cell thermo-elastomer with R factor of 3.7 and supplied with air vent and drain connections.
- **EVAPORATOR:** Immersion coil design - heavy stainless steel pipe - mounted in tank.
- **CONDENSING UNIT:** Compressor - oversized, lifetime lubricated hermetic or semi-hermetic mounted on vibration isolators. Condenser - aluminum fins and heavy duty fan motors, designed to operate in ambient to 120°F (optional). Fully charged with refrigerant and capacity tested.
- **CIRCULATION PUMP:** Stainless steel centrifugal - mounted over a stainless steel condensation tray. Piping between pump and cooler includes bypass regulating valve, all insulated with closed cell thermo-elastomer with R factor of 3.7, wrapped in canvas and coated with black waterproof acrylic.
- **CONTROLS:** Reliable analog controls include high/low pressure control, freeze control, thermostatic expansion valve, dehydrator, moisture indicator and magnetic starter.
- **HOUSING:** All components are mounted in a rugged, rust-proofed, enameled aluminum cabinet with cabinet top and corner legs of stainless steel on a welded angle iron frame with channel skids for easy mounting. Panels removable without tools for access to all components.

CHILLER TYPES

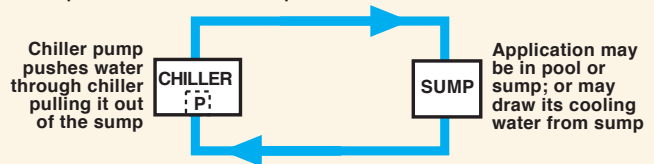
● PCP - CLOSED LOOP CHILLERS

Closed loop chillers use a storage type cooling tank to provide close temperature control of recirculating coolants. The tank is sealed to prevent coolant evaporation and fouling, and supplied with a liquid level gauge, fill port and clean out. The pump recirculates coolant at constant pressure and flow, which is adjustable by turning a manual bypass valve.



● POC - OPEN LOOP CHILLERS

Open loop chillers pump liquid from an open tank or sump, through the chiller and back to the sump. An adjustable thermostat senses the temperature of the make up liquid, cycling the chiller to insure constant temperature in the sump.



● PC - ONE PASS CHILLERS

A completely packaged liquid chiller designed for applications where the liquid to be cooled passes through the chiller only once before either being added as an ingredient to a product or fouled by the product it is cooling. It is most important that a single pass chiller be able to chill liquids at high and low flow rates without significant pressure drop or danger of freeze up and yet have close, accurate temperature control.

Filtrine PC chillers are specifically designed for one pass cooling. A high transfer immersion coil evaporator supplies maximum capacity at any flow rate with no pressure drop. Storage tank design permits close temperature control without short cycling.



Configurations To Meet Any Cooling Requirement

Filtrine recognizes the importance of keeping valuable floor space available for the equipment needed by medicine, high technology and industry. To accommodate this need, Filtrine chillers are available in six condenser configurations which are suitable for almost any cooling application.

AIR or WATER COOLED INDOOR UNITS

A: SELF-CONTAINED AIR COOLED CONDENSER FOR INDOOR INSTALLATION

Air cooled self-contained units may be considered the "standard" design. All components - compressors, condensers, filters, sterilizers, etc. - are contained within a single housing to be located within the building where it will be used. Depending on the size of the chiller, this location may be within a wall, under a counter, in an existing closet or utility space or, often, within a mechanical room designed for this purpose.

SPACE SAVING DESIGN (SSD) OPTION: When minimal chiller footprint is the primary consideration, specify this configuration.

W: SELF-CONTAINED WATER COOLED CONDENSER FOR INDOOR INSTALLATION

Water cooled condenser for hookup to city water or tower water. All components - compressors, condensers, filters, sterilizers, etc. - are contained within a single housing and located within the building where it will be used.

AR: SPLIT SYSTEM WITH REMOTE AIR COOLED FAN & CONDENSER ASSEMBLY FOR OUTDOOR INSTALLATION

A "Split" configuration chiller which is supplied with a separate weather-resistant air cooled condenser which is mounted outdoors at a remote location - usually within 100 feet of the chiller. The standard remote condenser may be used in a range of ambient temperatures from -20 to 100°F. **HIGH AMBIENT (HA) OPTION:** Available for installations where ambient temperatures fall outside of this range. By installing the condenser outdoors, noise and exhaust heat are greatly reduced or eliminated within the building where the chiller is in use. Due to the extra demand placed upon the condenser by outdoor temperatures, the remote air condenser is sized according to the temperatures in which it will be expected to operate. Please consult the factory for proper selection of the remote condenser for your chiller.

GLYCOL-FREE WEATHER-RESISTANT OUTDOOR UNITS

ARC: SPLIT SYSTEM WITH INDOOR EVAPORATOR & PUMP / OUTDOOR REMOTE AIR COOLED CONDENSING UNIT

Compact indoor cabinet contains the cooling tank, pump, filter and all necessary diagnostic and operator controls. The outdoor, weather resistant condensing unit takes the heat and operating noise away to a remote location. The condensing unit is designed to be low profile for low visibility... may be concealed by building parapet. **GLYCOL-FREE**

A-WP: SELF-CONTAINED WEATHER RESISTANT WITH AIR COOLED CONDENSER FOR OUTDOOR INSTALLATION

Weather resistant models have the same specifications as our standard self-contained units, but are designed for outdoor rooftop installation and operation. Equipped with anodized aluminum panels and stainless steel corner legs and top. The standard (A-WP) models incorporate the same profile as the Self-Contained models. **GLYCOL-FREE OPTION: In-line heater & circulating pump connected to UPS stand-by.**



TYPICAL ARC CHILLER
OUTDOOR UNIT

A-WP-LP: SELF CONTAINED WEATHER RESISTANT LOW-PROFILE WITH AIR COOLED CONDENSER FOR OUTDOOR INSTALLATION

Unique to Filtrine are the Low Profile Weather Resistant models (A-WP-LP). These models incorporate all the specifications and features of the standard weather resistant models, but are housed in a low profile cabinet which will not detract from the appearance of the roofline. **GLYCOL-FREE OPTION: In-line heater & circulating pump connected to UPS stand-by.**



TYPICAL ARC CHILLER
INDOOR UNIT



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Options and Accessories... To Customize Your Chiller

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.

Space Saver Design

Increases usable floor space by using smaller footprint cabinet.

Weather Resistant

For outdoor installation in most climates.

Explosion Proof

For Class 1, Div. I & II, Groups B, C or D hazardous locations.

No Cabinet

Compact cooler supplied without a cabinet to save space.

COMPONENTS

Agitation Pump

Recommended for applications where ΔT through chiller is more than 40°F. For all applications where desired outlet water temperature is below 45°F.

Blower

Built into cabinet for ducting hot air out of building.

Deionizer

Installed in-line; specify requirements.

Dual Pumps

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

Glycol-Free

In-line heater and circulating pump (on weather resistant chiller) connected to UPS standby electrical system. Insures recirculation of 50°F water even if power fails at below freezing temperatures.

High Ambient Condenser

Designed for up to 120°F.

In-Line Filter

Removes sediment from makeup ensuring clean liquids.

In-Line Heater

Heat liquids to optimum temperature automatically. Specify heater kw and temperature range.

Oil Cooler Interchanger

Specially designed heat exchanger for cooling medium viscosity oils or other liquids.

Pure System

For deionized water or other liquids that cannot come in contact with copper or brass. Evaporator fabricated out of type 304 stainless steel with polypropylene piping and fittings. Type 316 stainless steel also available for salt water or acids.

Redundancy

For critical applications such as computer cooling where downtime can be extremely expensive. Fail-safe design with 50% or 100% backup refrigeration and circulating system packaged within a single housing.

CONTROLS

Auto Alert

Factory-direct monitoring system provides "live" supervision of your chiller... around the clock, 7 days a week to forestall potential problems.

Auto Fill

Float switch senses liquid level in tank, activates solenoid valve on makeup line to keep tank full.

Auto Switchover to City Water

Auto switchover to city water in case of pump or compressor failure.

Ambient Tracking Control

Dual input controller maintains liquid at constant temperature differential relative to ambient.

Chiller Wired to Meet JIC Spec's

Close Temperature Control

Solid state temperature controller and hot gas bypass maintain liquid temperature at $\pm 0.5^\circ\text{F}$ of setting.

Dial Thermometer

For makeup and/or discharge temperature.

Flow Meter

Mounted on discharge line.

Fused Disconnect Switch

On power supply.

High/Low Temperature Interlock

In-line sensor wired to warning light, buzzer or machine to prevent damage in case of chiller breakdown. Warning set off when chiller temperature reaches beyond set high and low temperatures signifying compressor failure.

Low Ambient Controls

For down to -30°F .

Low Flow Interlock

In-line sensor wired to warning light, buzzer on machine. Warning signal is triggered upon low flow signifying pump failure.

Low Pressure Interlock

In-line sensor wired to warning light, buzzer on machine. Warning signal signifies pump failure upon low pressure.

Low Temperature

Chill water down to 34°F or antifreeze liquids down to 0°F. Consult Filtrine for capacities.

Low Water Level Interlock

In-line sensor wired to warning light, buzzer or machine signifying low water level in tank.

Pressure Gauge

For makeup and/or discharge pressure.

Solid State Controls/Digital Indicators

For temperature, pressure, flow, remote control panel, recorders, etc.



TYPICAL SSD CHILLER
SpaceSavingDesign

Process Chiller Selection Chart

MODEL PREFIX			FILTRINE MODEL NUMBER	CAPACITY @ OUTLET TEMP (1,000 BTU/HR) 90°F AMBIENT			COMP HP	PUMP HP*	TANK GAL	CABINET DIMENSIONS INCHES**			SHIPPING WEIGHT LBS**	
PCP Closed Loop	POC Open Loop	PC One Pass		30°F	50°F	68°F				W	D	H	PCP/ POC	PC
				-1°C	10°C	20°C								
PCP	POC	PC	25-2	1.3	1.8	2.4	1/4	1/14	2	22	16	24	145	120
PCP	POC	PC	33-3	2.0	2.8	3.5	1/3	1/14	2	22	16	24	145	120
PCP	POC	PC	50-5	3.0	4.0	5.0	1/2	1/8	5	26	16	30	180	150
PCP	POC	PC	75-7	4.5	6.0	7.6	3/4	1/8	8	28	20	36	325	250
PCP	POC	PC	100-10	6.0	8.5	10.5	1	1/3	12	36	24	36	500	470
PCP	POC	PC	150-15	8.0	9.0	15.0	1-1/2	1/3	16	42	27	42	600	570
PCP	POC	PC	150-17	8.0	11.0	17.0	1-1/2	1/3	16	42	27	42	600	570
PCP	POC	PC	150-19	8.0	13.0	19.0	1-1/2	1/3	16	42	27	42	600	570
PCP	POC	PC	150-21	8.0	15.0	21.0	1-1/2	1/3	16	42	27	42	600	570
PCP	POC	PC	200-24	13.5	19.0	24.0	2	1/2	20	48	27	45	700	670
PCP	POC	PC	200-27	13.5	21.0	27.0	2	1/2	20	48	27	45	700	670
PCP	POC	PC	200-30	13.5	23.0	30.0	2	1/2	20	48	27	45	700	670
PCP	POC	PC	200-33	13.5	25.0	33.0	2	1/2	20	48	27	45	700	670
PCP	POC	PC	300G-36	18.0	25.0	36.0	3	1/2	30	62	32	48	1400	1300
PCP	POC	PC	300S-38	21.0	30.0	38.0	3	1/2	30	62	32	48	1400	1300
PCP	POC	PC	300G-40	18.0	30.0	40.0	3	1/2	30	62	32	48	1400	1300
PCP	POC	PC	300G-44	18.0	30.0	44.0	3	1/2	30	62	32	48	1400	1300
PCP	POC	PC	500G-48	25.0	33.0	48.0	5	3/4	50	72	35	60	1800	1700
PCP	POC	PC	500G-60	25.0	35.0	60.0	5	3/4	50	72	35	60	1800	1700
PCP	POC	PC	500S-62	32.0	45.0	62.0	5	3/4	50	72	35	60	1800	1700
PCP	POC	PC	500G-70	25.0	48.8	70.0	5	3/4	50	72	35	60	1800	1700
PCP	POC	PC	750G-80	40.0	50.0	80.0	7-1/2	1-1/2	95	82	39	70	2200	2100
PCP	POC	PC	750G-96	40.0	53.0	96.0	7-1/2	1-1/2	95	82	39	70	2200	2100
PCP	POC	PC	750S-98	50.0	70.0	98.0	7-1/2	1-1/2	95	82	39	70	2200	2100
PCP	POC	PC	1000G-122	56.0	77.0	122.0	10	1-1/2	100	104	39	70	3000	2900
PCP	POC	PC	1000S-140	70.0	98.0	140.0	10	1-1/2	100	104	39	70	3000	2900
PCP	POC	PC	1500G-160	100.0	139.0	178.0	13-1/2	2	100	104	52	70	3000	2900
PCP	POC	PC	1500-180	110.0	150.0	180.0	15	2	100	104	52	70	3500	3400
PCP	POC	PC	2000-230	132.0	187.0	230.0	20	2	130	116	52	80	4000	3700
PCP	POC	PC	2500-270	165.0	225.0	270.0	25	2	140	126	54	86	4800	4500
PCP	POC	PC	3000-330 [§]	190.0	270.0	330.0	30	3	170	140	67	80	5800	5500
PCP	POC	PC	4000-430 [§]	260.0	360.0	430.0	40	3	260	106	62	70	7800	7500
PCP	POC	PC	5000-540 [§]	330.0	450.0	540.0	(2) 25	3	280	116	62	70	8500	8200
PCP	POC	PC	6000-660 [§]	380.0	540.0	660.0	(2) 30	5	340	126	62	80	8500	8200
PCP	POC	PC	8000-860 [§]	520.0	720.0	860.0	(2) 40	5	510	126	62	90	9500	9200

* PCP and POC models only. ** Dimensions and shipping weight may vary depending on options... consult factory for exact specs.
[§] Available with remote air or water cooled condenser only.



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Process Chiller Request for Quote

Filtrine offers a range of designs and options which help customize chillers for an unlimited number of applications. We have put together this list of data which will enable us to provide a more accurate equipment recommendation.

1. Brief explanation of process: _____

2. Liquid to be cooled: Water Other _____
3. Type of cooling circuit: (select one):
One Pass: From chiller thru process to drain
Closed Loop: From chiller to process thru closed circuit & back to chiller
Open Loop: From chiller to process thru open circuit (open sump or reservoir) & back to chiller
4. **If One Pass:**
 - a) Temperature of water entering chiller _____ °F ; _____ °C.
 - b) Desired temperature of water leaving chiller _____ °F ; _____ °C.
 - c) Flow rate of water through chiller _____ GPM ; _____ GPH.
 - d) Is flow rate constant? YES NO If not constant, estimate maximum flow _____ GPH.
5. **If Closed Loop or Open Loop:**
 - a) How much heat (heat load) is entering the water? _____ BTU / HR; _____ kw.
 - b) What is the desired temperature of water leaving chiller _____ °F ; _____ °C.
 - c) What is the desired flow rate of water through chiller _____ GPM ; _____ GPH.
 - d) What is the pressure needed to circulate the water through your loop? _____ PSI.
6. Power Available: _____ Volts _____ Hertz _____ Phase.
7. Space Limits: (Inches) _____ W _____ D _____ H.
8. Condensers: Air Cooled or Water Cooled
9. Location:
 Outdoors (Weather resistant)
 Indoors
 Split System - chiller indoors & condenser outdoors
Glycol-Free Split System - pump, evaporator & controls indoors & condensing unit outdoors
10. SPECIAL REQUIREMENTS _____

REQUEST FOR QUOTE SUBMITTED BY			PROJECT INFORMATION	
NAME			PROJ NAME	
FIRM			PROJ LOCATION	
ADDRESS			CONSULTING ENGR	
CITY	STATE	ZIP	LOCATION	
PHONE	FAX		SPEC WRITER	
EMAIL	WEBSITE		PHONE	FAX
DATE SENT	REPLY BY		EMAIL	

