

VAPOR COMPRESSION STILLS



MUELLER[®]

V A P U R E[®]



MUELLER® VAPURE® VAPOR COMPRESSION STILLS

The VaPure vapor compression still boils softened feedwater and condenses the steam to produce pure distilled water. It is the most cost-effective system available for producing high-purity water, yielding up to 1,000 GPH with no external steam source, or coolant, and no filtering membranes or resins. The VaPure still consistently outperforms reverse osmosis, deionization, and conventional distillation processes and costs less to maintain. It produces chemically and biologically pure distillate that meets or exceeds industry standards, including EPA, FDA, and WQA.

DESCRIPTION

The VaPure vapor compression still consists of a plate heat exchanger, a feedwater degasser, an evaporator/condenser, a compressor, and a distillate degasser. The exclusive plate-type evaporator/condenser uses cooling energy from incoming feedwater to cool pure vapor. Heat recovered from the distillate and wastewater stream are used to preheat feedwater. This

design makes VaPure stills six to ten times more energy efficient than conventional thermal stills and twice as efficient as other manufacturers' vapor compression stills. They are available with 25 GPH, 200 GPH, and 1,000 GPH capacities and are designed to work with a variety of pretreated feedwater sources, including tap water, deionized water, and brackish water.

OPTIONAL EQUIPMENT

The following accessories may be ordered with VaPure vapor compression stills.

- Filters—Water, Carbon, Media
- Pumps
- Softeners
- Parts Kits

INDUSTRIAL APPLICATIONS

Bottled water, public and private utilities, clinical and analytical applications.

Protected under U.S. Patent Numbers 4,671,856; 4,769,113; 4,869,067; 4,902,197; 4,919,592; and other patents pending.

FEATURES • BENEFITS

Exclusive patented plate-type evaporator/condenser

Rejects all types of impurities, removes organic and inorganic matter, eliminates pathogenic bacteria and pyrogens

Simple, automatic control system

Requires no filtering membranes or resins

Available with 25 GPH, 200 GPH, and 1,000 GPH output capacities

Hundreds of systems in operation

Aquaseal long-life compressor seal

Economizes electrical energy and eliminates the expense of external steam and cooling water sources

Meets or exceeds FDA, EPA, WQA, and other industry standards

User-friendly operation

Reduces maintenance requirements and the expense associated with changing filters

Choose the model that best suits your needs

Field-proven performance

Assures long-term compressor reliability

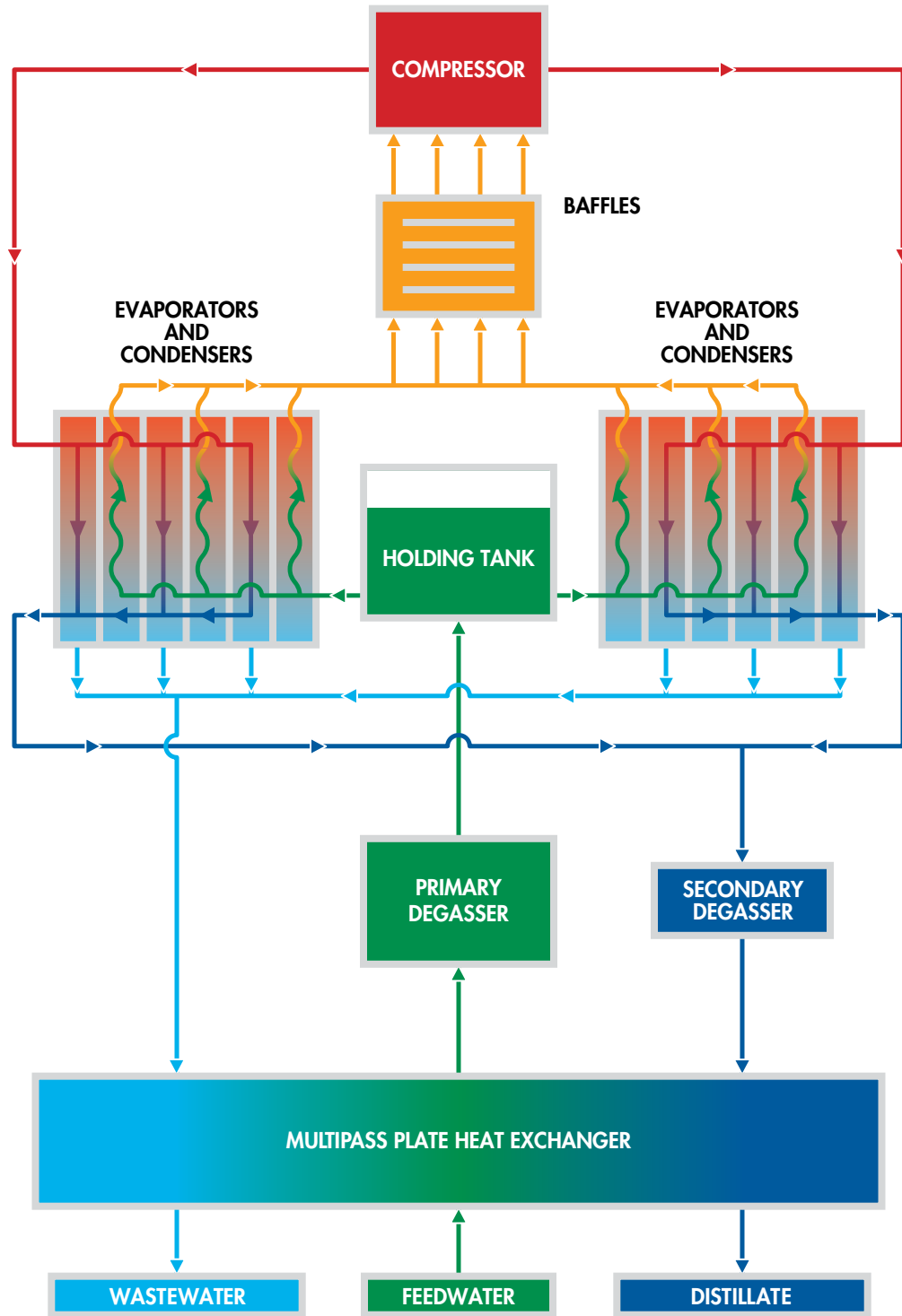
SPECIFICATIONS

MODEL NUMBERS	VCS-25	VCS-200	VCS-1000
FLOW RATES GPH (LPH)			
PURE DISTILLED WATER OUTPUT	25–30 (95–114)	200–250 (757–946)	1,000–1,200 (3,785–4,542)
EVAPORATOR WASTEWATER OUTPUT	10–30* (38–114)	20–200* (76–757)	200–300* (757–1,135)
AQUASEAL COOLING WATER OUTPUT	8–12 (30–45)	---	---
TOTAL FEEDWATER REQUIRED	43–72* (163–272)	220–450* (833–1,703)	1,200–1,500* (4,542–5,677)
DISTILLED WATER PURITY			
TOTAL DISSOLVED SOLIDS (TDS)	1.0 ppm max	1.0 ppm max	1.0 ppm max
RESISTIVITY	0.25 megohm min (4 mmHos-cm ²)	0.25 megohm min (4 mmHos-cm ²)	0.25 megohm min (4 mmHos-cm ²)
BACTERIA/PYROGENS	NONE DETECTABLE	NONE DETECTABLE	NONE DETECTABLE
ORGANICS	NONE DETECTABLE	NONE DETECTABLE	NONE DETECTABLE
APPLICABLE STANDARDS (CONSULT FACTORY FOR OTHER APPLICABLE STANDARDS)	WQA EPA DRINKING WATER FDA BOTTLED WATER	WQA EPA DRINKING WATER FDA BOTTLED WATER	WQA EPA DRINKING WATER FDA BOTTLED WATER
DISTILLED WATER RECOVERY (% OF FEEDWATER RECOVERED)			
DI FEED	65–75	90+	90+
TAP WATER FEED	60–75	60–75	75–90
BRACKISH FEED (<3000 ppm TDS)	45–75	45–75	45–75
FEEDWATER LIMITATIONS			
TOTAL HARDNESS	SOFTENED (1.0 ppm)	SOFTENED (1.0 ppm)	SOFTENED (1.0 ppm)
CALCIUM	1.0 ppm max	1.0 ppm max	1.0 ppm max
MAGNESIUM	1.0 ppm max	1.0 ppm max	1.0 ppm max
TOTAL DISSOLVED SOLIDS (TDS)	3,000 ppm max	3,000 ppm max	3,000 ppm max
pH	5.0–9.0	5.0–9.0	5.0–9.0
CHLORIDE	400 ppm max	400 ppm max	400 ppm max
FILTERED, DI WATER FEED	2 micron	2 micron	2 micron
SOFT WATER FEED	25 micron	25 micron	25 micron
TEMPERATURE	40°F–100°F (4°C–38°C)	40°F–100°F (4°C–38°C)	40°F–100°F (4°C–38°C)
PRESSURE	40 min psig (2.8 bar)	50–70 psig (3.5–4.8 bar)	50–70 psig (3.5–4.8 bar)
TEMPERATURES			
DISTILLED WATER OUTPUT	5°F–10°F (2.8°C–5.6°C)**	5°F–10°F (2.8°C–5.6°C)**	5°F–10°F (2.8°C–5.6°C)**
WASTEWATER OUTPUT	5°F–10°F (2.8°C–5.6°C)**	5°F–10°F (2.8°C–5.6°C)**	5°F–10°F (2.8°C–5.6°C)**
EVAPORATOR (BOILING)	219°F (104.0°C)	220°F–226°F (103.9°C–107.8°C)	220°F–226°F (103.9°C–107.8°C)
CONDENSER (STEAM)	222°F–223°F (105.5°C–106.1°C)	223°F–229°F (105.5°C–109.4°C)	223°F–229°F (105.5°C–109.4°C)
PRESSURES (psig)			
DISTILLED WATER OUTPUT	0 (GRAVITY FLOW) (0 bar)	30 (2.07 bar)	10 (0.69 bar)
WASTEWATER OUTPUT	0 (GRAVITY FLOW) (0 bar)	0 (GRAVITY FLOW) (0 bar)	0 (GRAVITY FLOW) (0 bar)
EVAPORATOR (BOILING)	2.5 (0.17 bar)	4.0 (0.28 bar)	4.0 (0.28 bar)
CONDENSER (STEAM)	3.5 (0.24 bar)	5.0 (0.34 bar)	5.0 (0.35 bar)
COMPRESSOR (psid)	1.0 psi DIFFERENTIAL (0.07 bar)	1.0 psi DIFFERENTIAL (0.07 bar)	1.0 psi DIFFERENTIAL (0.07 bar)
MATERIALS IN CONTACT WITH DISTILLATE OR VAPOR			
HEAT-TRANSFER PLATES	316 STAINLESS STEEL	316 STAINLESS STEEL	316 STAINLESS STEEL
COMPRESSOR	TITANIUM	316 STAINLESS STEEL	316 STAINLESS STEEL
OTHER METAL PARTS	316 STAINLESS STEEL	304 STAINLESS STEEL	316 STAINLESS STEEL
GASKETS, TUBING	SILICONE RUBBER	SILICONE RUBBER	SILICONE RUBBER
FITTINGS	STAINLESS STEEL, NYLON, POLYPROPYLENE	STAINLESS STEEL, NYLON, POLYPROPYLENE	STAINLESS STEEL, NYLON, POLYPROPYLENE
PHYSICAL DIMENSIONS			
HEIGHT–in (cm)	33 (84)	88 (224)	101 (257)
WIDTH–in (cm)	36 (92)	55 (140)	110 (280)
DEPTH–in (cm)	21 (54)	62 (158)	66 (168)
WEIGHT, OPERATING–lb (kg)	500 (227)	3,700 (1,678)	6,900 (3,130)
WEIGHT, SHIPPING–lb (kg)	625 (283)	3,400 (1,530)	6,400 (2,903)
ELECTRICAL			
VOLTAGE (V)	208/230	208/230/460	460
FREQUENCY (Hz)	50/60	50/60	50/60
PHASE	1	3	3
AVG. POWER CONSUMPTION (kW)	1.5–2.3	11–15	50
POWER CONSUMPTION PER 1,000 GALLONS (kWh)	75 max	70 max	70 max
MAXIMUM CONTINUOUS LOAD (amps/V)	20/230	100/230 OR 50/460	175 /460
COMPRESSOR HORSEPOWER (hp)	1.9	15	50

*Feedwater flow rate, wastewater flow rate, recovery rate, and distilled purity will be affected by feedwater quality. Consult factory for feedwater limitations.

**Above feedwater temperature

VAPOR COMPRESSION STILL SCHEMATIC OF OPERATION



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