VWR 1147P
Programmable Low Profile Circulating Bath



$1895.00

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VWR INTERNATIONAL™

VWR Circulators and Chillers

Superior Temperature Control Equipment











Clockwise from top left: 13721-200, 13721-172, 13721-138, 13721-082

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VWR INTERNATIONAL™

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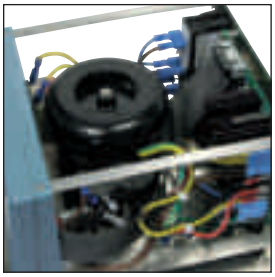
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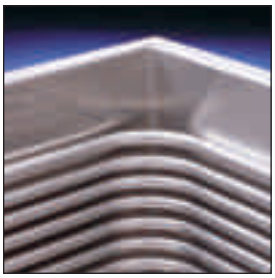
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All instruments are manufactured in an ISO 9001 accredited facility.



Precise Controllers

Choice of four controllers. From state-of-the-art programmable designs that provide ultimate control, to the analog design that is perfect for less demanding applications.



Durable Design

Immersed parts and reservoirs are made of corrosion-fighting stainless steel. The exterior surface is a tough powder coating for easy clean-up.



Double Safety

Your equipment and work are protected with redundant over temperature and low liquid cutoff standard on all circulators. 60Hz models are CSA approved, 50Hz models carry the CE mark.



Environmentally Responsible

VWR Refrigerated Circulators and Chillers use R-134a refrigerant, and no ozone-depleting CFC's are used in the manufacturing process.

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Modifications and Custom Configurations

VWR International has the capability to create customized temperature control solutions for your applications with unique requirements. Your VWR Sales and Customer Service Representatives are available to review and discuss your application needs.

Tell us your needs for fluid temperature, heat load, flow, fluid compatibility, pressure, electrical configuration, quantity of units needed and other requirements.

Our experienced engineers and production teams will design, quote and build units to the exact specifications your appliaction requires.



Time Savers

Advanced refrigeration systems and high wattage heaters respond quickly to temperature changes. You'll have minimum waiting time for your circulator to stabilize.



Versatile Pumps

VWR Signature® models offer powerful duplex pumps with five selectable flow rates. All other circulators offer simplex pressure pump with two pump speeds.



Easy Hook Up

Reservoir models have 1/4 in. NPT internally threaded inlet and outlet for easy attachment to external equipment. Adapters for 3/8, 1/4 and 3/16 inch tubing are supplied.



2-Year Warranty

Satisfaction guaranteed with a VWR 2-year warranty on parts and service. VWR® Circulators are made in the USA. You get quick access to service and parts.

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A full range of controllers to meet the most demanding applications.

VWR® Circulators, Chillers and Temperature Control Systems are a tremendous value in today's market. Superior performance and enhanced features give the user the ultimate flexibility and versatility in providing temperature control solutions.

Circulators offer a choice of four controllers, from the advanced VWR Signature® Models with programmability for critical control requirements to the cost-effective analog styles for less demanding applications. See which features suit your application needs best.

VWR Signature Programmable Controller

VWR Signature Circulators with Programmable Controller offer the greatest number of features with the simplicity of a one-touch, multi-function, Select/Set knob. Just dial in your application parameters and your operation is ready to go.

LCD readout simultaneously displays your setpoint and actual fluid temperature. Multi-language, full graphics display utilizes help menus for assistance in set up. The built-in timer provides visual and audible indicators for timed applications. The display will also let you know it's time for a calibration interval or even service attention.

Time/temperature programs can be set up directly from the front panel with the use of the controller's Select/Set knob. Ten programs can be stored in the controller's memory, each having 50 steps that can be cycled up to 999 times.

An RS-232 interface is standard. Data logging can be viewed from the graphics display or done via your PC. Included software supports National Instruments™ LabVIEW™, Microsoft® Excel* (data logging XLS and control XLA) and Palm OS®.

Remote probe capability is one of the strongest reasons for choosing this programmable controller. The optional probe can take over temperature control at the point of application, such as in a remote bath. Thermal loss in tubing lines is eliminated and accuracy is maintained.

Programmable models have a 5-speed adjustable pressure/suction (duplex) pump. Use the higher speeds for viscous fluids or external circulation, or choose the lower speeds for less turbulence, less heat generation, and quieter operation.

User adjustable high and low temperature limits and alarms are stored in non-volatile memory. A redundant safety thermostat protects over temperature and low liquid situations. On-demand automatic refrigeration control is standard on all refrigerated programmable units.

*Requires Microsoft Office 97, 2000, or 2002, running Windows 98, 2000, or XP



- Time/Temperature programming
- Multi-Language, Full Graphics LCD Display
- Remote Probe Capability
- RS-232 Interface with Software Included
- Adjustable Five Speed Pressure/Suction Pump

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VWR Signature® Digital Controller

The Digital Controller provides outstanding performance for demanding applications where programmability and remote probe are not required.

Operation is set up with unparalleled ease thanks to a single one-touch, multi-function Select/Set knob. The Select/Set knob provides convenient menu selection while the full graphics LCD displays both set and actual fluid temperatures simultaneously. Readout stability is ±0.01°C with temperature up to 200°C.

The powerful microprocessor controller can be tuned to optimize PID performance for various fluids and volumes. User-settable high and low safety limits, a redundant over-temperature and low-liquid level cutoff are standard.

Equipped with the 5-speed pressure/suction (duplex) pump, the Digital Controller can be used for open or closed loop applications. This model is an ideal choice, especially for budget-conscious applications.



- Accurate Microprocessor Control
- Multi-Language Full Graphics LCD Display
- Adjustable Five Speed Pressure/Suction Pump
- RS-232 Interface Included

VWR® Standard Controller

Operation is simple. One Push/Turn Encoder knob controls operational set up. Three user-defined temperature preset buttons allow for rapid setpoint change for your most frequently used applications. The bright LED monitors fluid temperature continuously, and with a quick touch of the encoder knob, the set temperature is displayed. Choose readout in either °C or °F.

All Standard Controllers have 2-speed pressure (simplex) pumps suitable for closed loop applications. Low pump speed is quiet and provides longer motor life while high speed is preferable for more demanding pumping requirements.

Digital set, readout to 0.1°C, and microprocessor control at a price near analog technology are distinguishing features of the Standard Controller. It's stability of ±0.05°C plus temperatures up to 150°C are excellent for many applications.

A redundant safety backup for over temperature and low liquid situations protects your work and equipment.



- Microprocessor Control With Easy-to-Read bright LED Display
- Three User-Defined Temperature Preset Buttons
- Cost Effective For Routine Use

VWR Analog Controller

The Analog Controller is available on selected models. It provides economical and accurate control with ±0.2°C stability and temperatures up to 100°C, ideal for general and routine laboratory applications.

Zero switching controller design eliminates annoying radio frequency electrical interference, which can disrupt nearby laboratory equipment.

The 2-speed pressure (simplex) pump produces a flow of 9 or 15 liters per minute. Temperature readout is via thermometer, which is supplied.

A clear, skirted dial reduces parallax and aids in setting accuracy.



- Most Economical Model
- Proportional Temperature Control
- Zero Switching Eliminates RFI
- Redundant Safety Backup

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VWR Signature Refrigerated/Heating Circulating Baths, 6 Liter, Low Profile

- For Use on Mobile Cart
- Convenient for Shelf Placement
- Easy Access Sample Immersion
- Work Space on Bath Top



The 1147P and 1146D offer excellent temperature range, cooling capacity and a 5-speed adjustable pressure & suction (duplex) pump along with a full graphics LCD display.

The low profile design fits many space requirements nicely. Placement on a shelf above the work area frees up bench space while allowing eye-level access to the controls. On the benchtop, the lower profile permits easier access to the reservoir. Space on the stainless steel top can be used for additional work area. The wider footprint adds stability for calibration work or applications where mobility on a cart is necessary.

Programmable Model 1147P. This model features time/temperature programmability. Data logging via the RS-232 interface and appropriate software are also possible. LabVIEW™ drivers and Excel macros offer even greater programming and data logging convenience. Remote temperature probe capability is provided.

Digital Model 1146D. The digital controller offers excellent temperature range and stability and is your best choice when remote probe, time/temperature programming and communication software are not required. Perfect for applications on a budget.

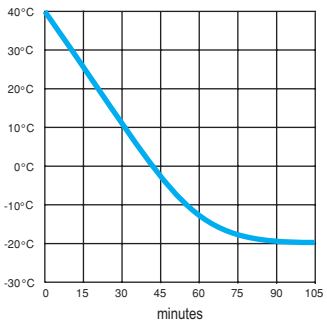
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Calibration • Chromatography Columns • Densitometers • Distillation Condensers Electrophoresis Apparatus • Polarimeters • General Laboratory Cooling • Isoelectric Focusing Refractometers • Rotary Evaporators • Spectrophotometers • Viscometers*

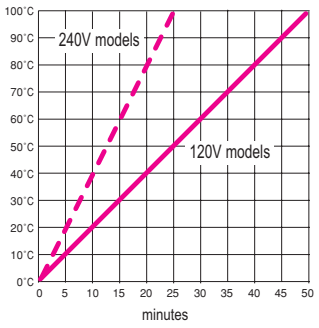
Specifications	Model 1147P	Model 1146D
Temperature Range / Stability	-20° to 200°C / ±0.01°C	
Controller / RS-232	Programmable / Yes	Digital / Yes
Readout / Accuracy	Graphics LCD, °C or °F / ±0.25°C	
Reservoir Capacity	6 liters	
Cooling Capacity	200 Watts @ +20°C, 140 Watts @ 0°C, 100 Watts @ -10°C	
Heater	1100 Watt (120V models), 2200 Watt (240V models)	
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.	
Suction Flow Rate	5-speed, 8 to 18 liters/min.	
Safety Cutoffs	Adjustable Over-Temperature & Low-Liquid Cutoff	
Working Access, L x W x D	5-1/4 x 5-1/4 x 5-1/2 in. / 13.3 x 13.3 x 14 cm	
Overall Dimensions, L x W x H	15-3/4 x 18-3/4 x 17 in. / 40 x 47.6 x 43.2 cm	
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge	
Shipping Weight	76 lbs. / 34.5 kg	67 lbs. / 30.4 kg
Cat. No. (120V, 60Hz, 10Amps)	**13271-094** $3415	**13271-090** $2675
Cat. No. (240V, 50Hz, 5Amps)	**13271-096** $3440	**13271-092** $2700

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Signature Refrigerated/Heating Circulating Baths, 6 Liter, Space Saving

- Most Popular Design
- Saves Valuable Bench Space
- Quiet Operation



This series features a 6 liter reservoir in a space saving vertical design. Only 8-1/4 inches (21cm) wide, the small foot print conserves precious bench space.

Size configuration and a wide range of performance make this series the most popular circulator style. Dependable, precise and compact, all models feature redundant over temperature and low liquid level protection.

The refrigeration system is designed to be used below 60°C. This allows rapid bath cooling from 60°C or lower, plus maximizes temperature control and reduces energy consumption above 60°C. The hermetically sealed compressor is designed for years of maintenance-free use.

Programmable Model 1167P. This top-of-the-line model features time/temperature programmability. Programs can be set directly from the front panel or from a PC using the RS-232 interface. LabVIEW™ drivers and Excel macros offer even greater programming and data logging convenience. Remote probe capability further enhances the 1167P capabilities.

Digital Model 1166D. The digital controller offers great performance and is your ideal choice when remote probe, time/temperature programming and communication software are not required. Perfect for applications on a budget.

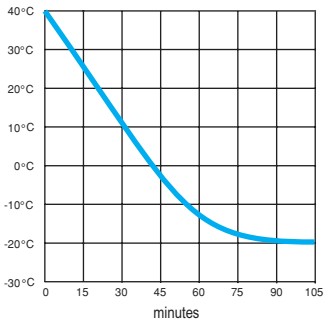
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Calibration • Chromatography Columns • Densitometers • Distillation Condensers Electrophoresis Apparatus • Polarimeters • General Laboratory Cooling • Isoelectric Focusing Refractometers • Rotary Evaporators • Spectrophotometers • Viscometers*

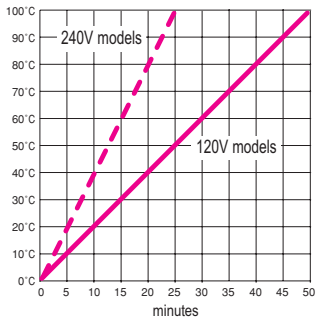
Specifications	Model 1167P	Model 1166D
Temperature Range / Stability	-20° to 200°C / ±0.01°C	
Controller / RS-232	Programmable / Yes	Digital / Yes
Readout / Accuracy	Graphics LCD, °C or °F / ±0.25°C	
Reservoir Capacity	6 liters	
Cooling Capacity	200 Watts @ +20°C, 140 Watts @ 0°C, 100 Watts @ -10°C	
Heater	1100 Watt (120V models), 2200 Watt (240V models)	
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.	
Suction Flow Rate	5-speed, 8 to 18 liters/min.	
Safety Cutoffs	Adjustable Over-Temperature & Low-Liquid Cutoff	
Working Access, L x W x D	5-1/4 x 5-1/4 x 5-1/2 in. / 13.3 x 13.3 x 14 cm	
Overall Dimensions, L x W x H	15-3/4 x 8-1/4 x 22-1/2 in. / 40 x 21 x 57 cm	
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge	
Shipping Weight	68 lbs. / 31 kg	64 lbs. / 29 kg
Cat. No. (120V, 60Hz, 10Amps)	**13271-082** $3415	**13271-078** $2675
Cat. No. (240V, 50Hz, 5Amps)	**13271-084** $3440	**13271-080** $2700

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Signature Refrigerated/Heating Circulating Baths, 13 Liter, Low Temperature Control

- Powerful Cooling to -30°C
- Large 13L Reservoirs
- Energy Efficient Systems



The 1157P and 1156D have greater heat removal over a broad temperature range combined with a large reservoir.

A unique energy management and refrigeration system provides up to 50% more energy efficiency than traditional systems. This technology saves energy by delivering the precise amount of refrigerant for a given heat load. It allows refrigeration to be used at high temperatures to cool the bath quickly.

Programmable Model 1157P. The programmable controller enhanced features of time/temperature programming and remote probe capability. RS-232 interface and PC programming software are standard. LabVIEW™ drivers and Excel macros offer even greater programming and data logging convenience.

Digital Model 1156D. This model offers excellent temperature range and stability and is your best choice when remote probe, time/temperature programming and communication software are not required. Perfect for applications on a budget.

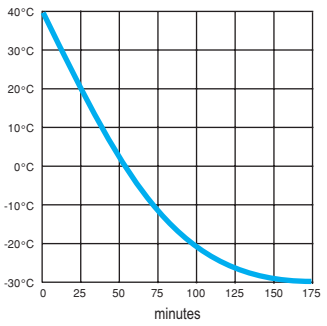
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Low Temperature Calibration • Cloud & Pour Point Testing • Cell Freezing Low Temperature Reactions • Distillation Condensers • Low Temperature Reactions General Laboratory Cooling • Rotary Evaporators • Spectrophotometers • Viscosity Studies*

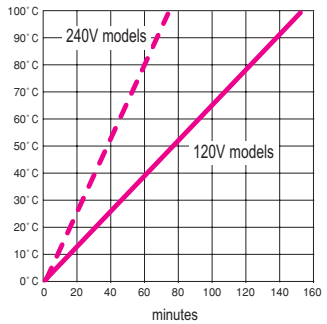
Specifications	Model 1157P	Model 1156D
Temperature Range / Stability	-30°C to 200°C / ±0.01°C	
Controller / RS-232	Programmable / Yes	Digital / Yes
Readout / Accuracy	Graphics LCD, °C or °F / ±0.25°C	
Reservoir Capacity	13 liters	
Cooling Capacity	660 Watts @ +20°C, 480 Watts @ 0°C, 240 Watts @ -20°C, 100 Watts @ -30°C	
Heater	1100 Watt (120V models), 2200 Watt (240V models)	
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.	
Suction Flow Rate	5-speed, 8 to 18 liters/min.	
Safety Cutoffs	Adjustable Over-Temperature & Low-Liquid Cutoff	
Working Access, L x W x D	6 x 11 x 5-1/2 in. / 15.2 x 28 x 14 cm	
Overall Dimensions, L x W x H	17 x 15-1/2 x 24-3/4 in. / 43x 39.4 x 63 cm	
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge	
Shipping Weight	137 lbs. / 62.2 kg	141 lbs. / 64 kg
Cat. No. (120V, 60Hz, 12Amps)	**13271-106** $3515	**13271-102** $2895
Cat. No. (240V, 50Hz, 6Amps)	**13271-108** $3540	**13271-104** $2920

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Signature Refrigerated/Heating Circulating Baths, 28 Liter

- Temperatures to -25°C
- Reservoir Holds More or Larger Samples
- Large Workspace on Top with Wide Access Opening



The 1187P and 1186D's large access reservoir of 10-1/4 x 10-1/4 inches allows for convenient immersion of larger or more samples. The 28 liter capacity helps maintain precise temperature control and compensate for sudden heat load changes.

A unique refrigeration system and energy managing controllers are up to 50% more energy efficient than traditional systems. This technology saves energy by delivering the precise amount of refrigerant for a given heat load. Refrigeration can be used at high temperatures to cool the bath quickly. All models feature excellent stability, redundant over temperature and low liquid level protection.

Programmable Model 1187P. Features include time/temperature programming and remote probe capability. RS-232 interface and PC programming software are standard. LabVIEW™ drivers and Excel macros offer greater programming and data logging convenience.

Digital Model 1186D. The digital controller offers great performance and is your ideal choice when remote probe, time/temperature programming and communication software are not required. Perfect for applications on a budget.

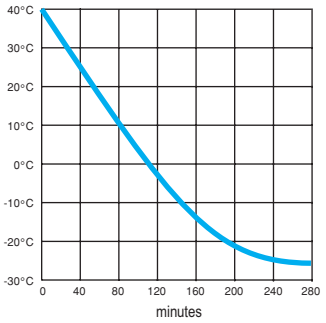
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Temperature Calibration • Cloud & Pour Point Testing • Distillation Condensers Low Temperature Reactions • General Laboratory Cooling • Rotary Evaporators Spectrophotometers • Sample Tempering • Viscosity Studies*

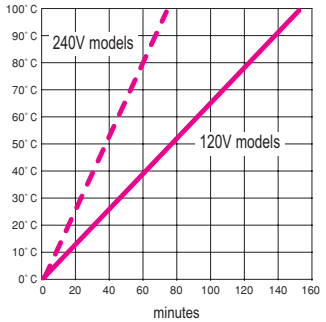
Specifications	Model 1187P	Model 1186D
Temperature Range / Stability	-25°C to 150°C / ±0.01°C	
Controller / RS-232	Programmable / Yes	Digital / Yes
Readout / Accuracy	Graphics LCD, °C or °F / ±0.25°C	
Reservoir Capacity	28 liters	
Cooling Capacity	700 Watts @ +20°C, 510 Watts @ 0°C, 260 Watts @ -20°C	
Heater	1100 Watt (120V models), 2200 Watt (240V models)	
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.	
Suction Flow Rate	5-speed, 8 to 18 liters/min.	
Safety Cutoffs	Adjustable Over-Temperature & Low-Liquid Cutoff	
Working Access, L x W x D	10-1/4 x 10-1/4 x 10-1/4 in. / 26 x 26 x 26 cm	
Overall Dimensions, L x W x H	19-1/2 x 27-1/2 x 18-1/2 in. / 49.5 x 70 x 47 cm	
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge	
Shipping Weight	160 lbs. / 72.6 kg	160 lbs. / 72.6 kg
Cat. No. (120V, 60Hz, 12Amps)	**13271-130** $3625	**13271-126** $3070
Cat. No. (240V, 50Hz, 6Amps)	**13271-132** $3650	**13271-128** $3095

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Signature Refrigerated/Heating Circulating Baths, 13 Liter, Extra-Low Temperature Control

- Powerful Cooling to -45°C
- Ample Reservoir For Sample Immersion
- Enlarged Access Opening



The 1197P & 1196D circulators provide extended cooling down to a temperature of -45°C with a large 13 liter reservoir. With this extra-low capability and removal of 900 Watts @ 20°C, these circulators cover a wide range of applications.

The unique refrigeration system and energy managing controllers are up to 50% more energy efficient than traditional systems. This technology saves energy by delivering the precise amount of refrigerant for a given heat load.

Refrigeration can be used at high temperatures to cool the bath quickly. Both models feature a 5-speed adjustable pressure/suction pump, excellent stability, redundant over-temperature and low-liquid level protection.

Programmable Model 1197P. This model has a wide temperature range and high stability. Additional features include time/temperature programming and remote probe capability. RS-232 interface and software for PC programming are standard. LabVIEW™ drivers and Excel macros offer even greater programming and data logging convenience.

Digital Model 1196D. The digital controller offers great performance and is your ideal choice when remote probe, time/temperature programming and communication software are not required. Perfect for applications on a budget.

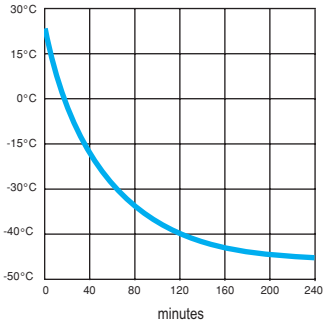
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Low Temperature Calibration • Low Temperature Reactions • Cell Freezing Cloud & Pour Point Testing • Distillation Condensers • General Laboratory Cooling Rotary Evaporators • Spectrophotometers • Viscosity Studies*

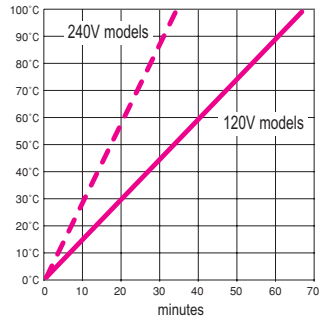
Specifications	Model 1197P	Model 1196D
Temperature Range / Stability	-45°C to 200°C / ±0.01°C	
Controller / RS-232	Programmable / Yes	Digital / Yes
Readout / Accuracy	Graphics LCD, °C or °F / ±0.25°C	
Reservoir Capacity	13 liters	
Cooling Capacity	900 Watts @ +20°C, 825 Watts @ 0°C, 200 Watts @ -30°C	
Heater	1100 Watt (120V models), 2200 Watt (240V models)	
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.	
Suction Flow Rate	5-speed, 8 to 18 liters/min.	
Safety Cutoffs	Adjustable Over-Temperature & Low-Liquid Cutoff	
Working Access, L x W x D	6 x 11 x 5-1/2 in. / 15.2 x 28 x 14 cm	
Overall Dimensions, L x W x H	17 x 15-1/2 x 24-3/4 in. / 43x 39.4 x 63 cm	
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge	
Shipping Weight	148 lbs. / 67 kg	
Cat. No. (120V, 60Hz, 12Amps)	**13271-118** $3985	**13271-114** $3265
Cat. No. (240V, 50Hz, 6Amps)	**13271-120** $4010	**13271-116** $3280

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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Chillers Improve Your Operations

There are numerous advantages in using chillers over tap water cooling of scientific instruments, medical instruments and prodcution machinery.

They offer flexibility in placement, with no need of placing your equipment near a water source and drain. Temperature and pressure are more consistent throughout the year. There is no build up of mineral deposits in the cooling system to act as a thermal barrier reducing heat transfer. Finally, the costs associated with water supply and disposal are eliminated.



How to choose a chiller

Choosing the right size recirculating chiller adds to the economies of its use. The optimum size needed is based on the amount of heat your application is generating, plus additional power to maintain temperature under varying loads.

The manufacturer of the device you are cooling should supply heat removal information. If this information is not available, please call your VWR representative to discuss your application.

If heat removal information is not available, here's how to calculate the heat load of your system:

$$\textbf{Watts} = \frac{[\Delta T° \times (K)]}{S}$$

In Celsius:

$$\text{Watts} = \frac{[\Delta T° \times (4{,}186)]}{S}$$

In Fahrenheit:

$$\text{Watts} = \frac{[\Delta T° \times (2{,}326)]}{S}$$

Where:

ΔT= The difference between incoming and outgoing tap water temperatures of your instrument. Measure carefully using the same thermometer for both locations.

S = The number of seconds to fill a one liter container.

K = Conversion constant for density and specific heat of water, and the ratio to convert units measured into watts per hour for Celsius or Fahrenheit.

Additional Considerations:

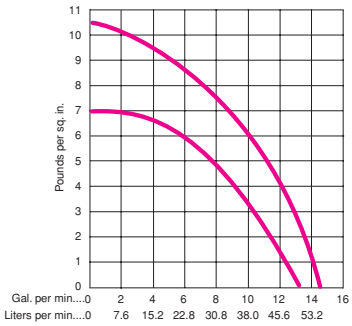
1. If ambient temperature of the cooling location is above 20°C, add 1% to the calculated wattage for each 0.5°C above 20°C.
2. If operating at 50Hz, add 20% to the calculated wattage.
3. If line voltage is consistently below rated voltage, or if you work at high altitudes, add 10% to the calculated wattage.
4. Future additional cooling needs or variability of heat output of existing unit.

Contact your VWR representative for additional assistance about size selection or custom application inquiries.

Pump Comparison

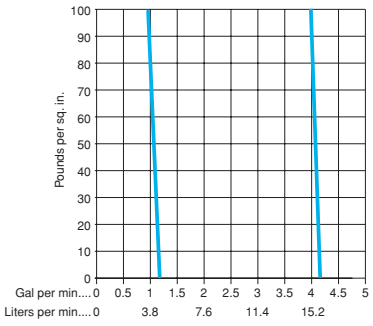
Magnetic Drive Pump

Excellent flow with low pressure characteristics. Extremely quiet and durable.



Positive Displacement Pump

Complete pressure versatility. A popular choice for demanding applications.



VWR Signature Chillers offer a choice of pump

	Magnetic Drive Pump	Positive Displacement Pump
Pressure	10 psi	Adjustable 20-100 psi
Flow Rate	4.3 gpm / 16.3 lpm	1 gpm / 3.8 lpm (1/4 HP to 1/2 HP) 4 gpm / 15.2 lpm (3/4 HP to 1 HP)

External Pressure Reducer. For chillers equipped with high pressure positive displacement pump. Reduces output of chiller to adjustable range of 10-45 psi. **Cat. No. 13270-702** **$300.00**

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VWR Signature Recirculating Chiller, 1/4 HP to 1 HP

- Built for Continuous Operation
- Save Money and Increase Efficiency
- Conserve Resources
- Eliminate Temperature Variation
- Choice of Pump

VWR Signature Chillers provide up to 25% more cooling than competitive units without higher prices. You get lower operating temperatures in addition to more heat removal. Our new high-efficiency heat exchanger assures efficient cooling with reserve power to spare. Reserve heat removal capability is especially important when dealing with variable heat loads. This extra cooling power may fill future needs.

With digital convenience and microprocessor control, operating temperature is displayed to 0.1°C, and with the touch of a button, the set temperature can be quickly checked. The display readout is selectable in °C or °F. For convenience in viewing, the control panel is slanted, allowing the LED temperature display to be easily read.

Temperatures are maintained to ±0.5°C. The innovative refrigeration control system senses and allocates the right amount of refrigerant to control cooling precisely. Superior efficiency and precise control are assured by the use of PID controller technology.

The compressor runs quietly and continuously, eliminating the grueling start-stop cycles used in some refrigeration systems. When called for, the microprocessor-based refrigeration system easily changes from "coasting" to full cooling. Result - long compressor life, rapid response.



VWR Signature Series Chillers offer a choice of pump

	Magnetic Drive Pump	Positive Displacement Pump
Pressure	10 psi	Adjustable 20-100 psi
Flow Rate	4.3 gpm / 16.3 lpm	1 gpm / 3.8 lpm (1/4 HP to 1/2 HP) 4 gpm / 15.2 lpm (3/4 HP to 1 HP)

Specifications	Model 1171MD or PD	Model 1173MD or PD	Model 1175MD or PD	Model 1177MD or PD	Model 1179MD or PD
Temperature Range / Stability	-5°C to 40°C / ±0.5°C		-10°C to 40°C / ±0.5°C	-15°C to 40°C / ±0.5°C	
Controller / Readout / Accuracy	Standard / LED, °C or °F / ±0.1°C				
Compressor	1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP
Cooling Capacity @ 20°C 10°C 0°C	750 Watts 450 Watts 100 Watts	1100 Watts 780 Watts 350 Watts	1320 Watts 1055 Watts 550 Watts	2500 Watts 1700 Watts 760 Watts	2850 Watts 1925 Watts 940 Watts
Dimensions, H x W x L	24 x 14-3/8 x 26-1/2 in. / 61 x 36.5 x 67.3 cm				
Shipping Weight	164 lbs. / 74.5 kg	167 lbs. / 76 kg	169 lbs. / 76.8 kg	224 lbs. / 101.8 kg	225 lbs. / 102.3 kg
Magnetic Drive Pump Models					
Cat. No. (120V, 60 Hz)	**13271-184** $2235 (6.8A)	**13271-192** $2470 (8A)	**13271-200** $2745 (13A)	N/A	N/A
Cat. No. (208-230V, 60 Hz)	N/A	N/A	N/A	**13271-208** $3010 (7.5A)	**13271-216** $3450 (8.5A)
Cat. No. (240, 50 Hz)	**13271-186** $2280 (3.4A)	**13271-194** $2505 (4A)	**13271-202** $2780 (6.5A)	**13271-210** $3045 (7.5A)	**13271-218** $3485 (8.5A)
Positive Displacement Pump Models					
Cat. No. (120V, 60 Hz)	**13271-188** $2285 (9.6A)	**13271-196** $2520 (10.8A)	**13271-204** $2795 (15.8A)	N/A	N/A
Cat. No. (208-230V, 60 Hz)	N/A	N/A	N/A	**13271-212** $3060 (10A)	**13271-220** $3500 (11A)
Cat. No. (240V, 50 Hz)	**13271-190** $2330 (4.8A)	**13271-198** $2555 (5.4A)	**13271-206** $2830 (7.9A)	**13271-214** $3095 (10A)	**13271-222** $3535 (11A)

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

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VWR Signature Refrigerated Chiller, 1.5 HP

- Cooling Capacity to 5200 Watts
- Five Gallon Reservoir
- Choice of Pump

The **Model 117-6155P** is an efficient 1.5 HP chiller offering larger applications immediate cooling (up to 5200 Watts of cooling at 20°C).

This compact powerhouse incorporates an innovative heat transfer system with a unique refrigeration technology that delivers the right amount of cooling for changing heat loads.

The five gallon reservoir has a large opening for quick fill ups and a reservoir drain for convenient drainage. Easy access to the pressure regulator, fluid filter and air filter makes regular maintenance a breeze. The base and side panel air vents provide maximum air flow for enhanced cooling capability.



VWR Signature Rack Mount Refrigerated Chiller

- Cooling Capacity to 390 Watts
- Rack Mount Option with Full Extension Slides
- Competitively Priced

The **Model 117-612** is a new, compact chiller that provides a stable flow of coolant to external apparatus and is ideal for cooling electrophoresis cells, distillation condensers, and CCD cameras as well as other routine applications.

The analog controller provides economical and accurate temperature control. It's easy to use - just dial in your set temperature and go. This unit features a high efficiency heat exchanger, and the rear panel air vents provide maximum air flow for enhanced cooling capability. The self-priming pump ensures very low maintenance.

The Rack Mount Option allows the unit to fit in a standard 19 inch rack and is mounted on full extension slides for easy access to the reservoir.



Specifications	Model 117-6155P	Model 117-612
Temperature Range / Stability	5°C to 35°C / ± 0.5°C	-10°C to +40°C / ±0.2°C
Controller / Readout / Accuracy	Standard / LED, °C or °F / ±0.1°C	Analog / N/A
Compressor	1.5 HP	1/10 HP
Reservoir	19 liters	0.4 liters
Cooling Capacity	5200 Watts / 17,732 BTUs/hr @ 20°C 3600 Watts / 12,276 BTUs/hr @ 10°C 2700 Watts / 9,207 BTUs/hr @ 5°C	390 Watts / 1332 BTUs/hr@ 20°C 290 Watts / 994 BTUs/hr @ 10°C 125 Watts / 427 BTUs/hr @ 0°C
Pressure @ 0 Flow Rate	20 - 100 psi	5.2 psi
Flow Rate @ 0 PSI	4 gpm / 15.2 lpm	1.43 gpm / 5.4 lpm
Fittings	1/2 in. FPT	3/8 in. FPT
Dimensions, H x W x L	30 x 21 x 27 in. / 77 x 53 x 68 cm	13 x 12 x 18.5 in. / 33 x 30.5 x 47 cm
Shipping Weight	450 lbs. / 204 kg	54 lbs. / 24.5 kg
Cat. No. (Electrical)	**13270-112** $4500 (208/230V, 60Hz, 1 PH, 12Amps)	**13270-116** $1650 (120V, 60Hz, 7Amps)
Cat. No. (Electrical)	**13270-114** $4700 (240V, 50Hz, 1 PH, 6Amps)	**13270-118** $1670 (240V, 50 Hz, 3.5Amps)

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F.
For 50Hz units, derate cooling capacity by 17%.

Contact your VWR representative for information on optional pumps.

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VWR Signature Heating Immersion Circulator

- Time/Temperature Programmability
- Five Speed Adjustable Pump
- Controllable Through RS-232 Interface
- Remote Probe Capability

Create your personalized bath with the VWR Signature Immersion Circulator. Built on an expandable bridge, this powerful circulator fits on top of most baths and tanks. The strong 5-speed adjustable duplex pump circulates to external applications as well.

Programmable Model 1127P. Features a full graphics display, time and temperature programming with ten programs that can be stored in the controller's memory, each having 50 steps that can be cycled up to 999 times. An RS-232 interface and PC programming software are standard. LabVIEW™ drivers and Excel macros offer even greater programming and data logging convenience. Remote probe capability is also standard.

For internal circulation or external open and closed loop applications, the 1127P has a strong pressure & suction (duplex) pump with five selectable speeds. The optional remote probe provides more accurate control in external circulation.

Controllers described on pages 4-5. Accessories listed on page 26. See page 15 for Open Bath Systems.



The 1127P is shown here with a VWR® Acrylic Open Tank, sold separately. See page 15 for VWR Open Bath Systems.

Ideal For: *Bacteriological Incubation • Calibration • Kinetic Research Cell Culture • Enzyme Assays • Tempering Samples • Viscosity Studies Thawing Frozen Specimens • Warming Culture Media*

Specifications	Model 1127P
Temperature Range / Stability	Amb.+5°C to 200°C* / ±0.05°C*
Controller / RS-232	Programmable / Yes
Readout / Accuracy	Graphics LCD, °C or °F / ±0.25°C
Heater	1100 Watt (120V models), 2200 Watt (240V models)
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.
Suction Flow Rate	5-speed, 8 to 18 liters/min.
Safety Cutoffs	Adjustable Over-Temperature & Low-Liquid Cutoff
Overall Dimensions, L x W x H	8-3/4 x 15 x 11-1/2 in. / 22.2 x 38.1 x 29.2 cm
Bridge Span	Expands 15 in. to 25 in. / 38.1 cm to 63.5 cm
Immersion, minimum to maximum	2-3/4 in. to 4-1/2 in. / 7 cm to 11.4 cm
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge
Shipping Weight	22 lbs. / 10 kg
Cat. No. (120V, 50-60Hz, 5Amps)	**13271-142** $2245
Cat. No. (240V, 50-60Hz, 2.5Amps)	**13271-144** $2270

* Temperature range and stability vary depending on bath volume, surface area, insulation and type of fluid.

Note: Performance specifications determined at ambient temperature of 20°C/68°F.

TECH TIP

Advantages of Multi-Speed Circulator Pumps

The 2-speed simplex pump in these immersion circulators offers:

Slow Speed

- ✔ Longer Motor Life
- ✔ Quieter Operation
- ✔ Less Bath Turbulence
- ✔ Less Fluid Heating From Friction

Fast Speed

- ✔ Higher Pump Head
- ✔ Use of More Viscous Fluids
- ✔ Better Flow In Small Tubing
- ✔ Quicker Response to Changes
- ✔ Pump to Multiple Systems

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VWR Open Bath Systems

- Stainless Steel
- See-Through Acrylic
- Stainless Steel with Refrigeration

Stainless Steel Tanks

Seamless and insulated, they can be used for fluid temperatures up to 300°C. They have a durable powder-coated housing with carrying handles for easy handling and placement.

Acrylic Open Tanks

Provide visibility of immersed samples, never rust, and cost less than stainless steel baths. Their upper working limit is 70°C. The bottoms are elevated 2-1/8 inches (5.4 cm) to allow placement of low profile magnetic stirrers or other devices under the bath.

Refrigerated Stainless Steel Bath

Designed for use with an immersion circulator or other device that controls bath temperature. Without the use of an accessory heating controller, this model cools fluid, uncontrolled, down to the limit of its capability. In conjunction with a VWR immersion circulator, it can produce stable temperatures from 0°C to 200°C.

See page 26 for accessories.



Stainless Steel Open Tanks

Capacity	13 liters	28 liters
Working Access, L x W x D	9 x 11-3/4 x 7-3/4 in. 22.9 x 29.8 x 19.7 cm	11-3/4 x 19-1/2 x 7-3/4 in. 29.8 x 49.5 x 19.7 cm
Shipping Weight	15 lbs. / 6.8 kg	25 lbs. /11.4 kg
Cat. No.	**13270-875** $395	**13270-877** $535

Acrylic Open Tanks

Capacity	8 liters	16 liters	21 liters
Working Access, L x W x D	18 x 5 x 7-1/2 in. 45.7 x 12.7 x 19 cm	18 x 10 x 7-1/2 in. 45.7 x 25.4 x 19 cm	18 x 13-1/8 x 7-1/2 in. 45.7 x 33.3 x 19 cm
Shipping Weight	7 lbs. / 3.2 kg	9 lbs. / 4.1 kg	11 lbs. / 5 kg
Cat. No.	**13270-882** $195	**13270-884** $205	**13270-886** $270

Refrigerated Stainless Steel Bath

Capacity	13 liters
Temperature Range	0°C to 150°C
Cooling Capacity	400 Watts @ 20°C 270 Watts @ 10°C 90 Watts @ 0°C
Working Access, L x W x D	9 x 11-3/4 x 7-3/4 in. 22.9 x 29.8 x 19.7 cm
Overall Dimensions, L x W x D	13-1/2 x 22 x 10 in. 34.3 x 55.9 x 25.4 cm
Shipping Weight	60 lbs. / 27.3 kg
Cat. No. (120V, 60Hz, 3A)	**13270-879** $1395
Cat. No. (240V,50Hz, 1.5A)	**13270-880** $1425

Note: Cooling capacity, Watts x 3.41 = BTUs/hr.
Performance specifications determined at ambient temperature of 20°C/68°F.

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VWR Signature Heating Circulating Baths

- Larger Access Area For Above Ambient Temperature Control
- Compact Design
- Carrying Handles On The 13L And 28L Models for Easy Placement

VWR Signature heating circulating baths offer the widest temperature range, high stability and 5-speed pressure & suction (duplex) pump. The pump permits operation in open and closed loop applications. These models provide quiet operation and are compact for easy placement in crowded work stations.

Programmable Models, 1137P, 1137-1P and 1137-2P. The Programmable Controller offers advanced operation features combined with time/temperature programming and remote probe capability. RS-232 interface for PC communication is standard. LabVIEW™ drivers and Excel macros offer even greater programming and data logging convenience.

Digital Models, 1136D, 1136-1D and 1136-2D. The digital controller offers great performance and is your ideal choice when remote probe, time/temperature programming and communication software are not required. Perfect for applications on a budget.

Controllers described on pages 4-5. Accessories listed on page 26.

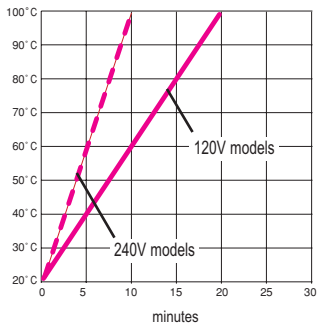
For operation closer to ambient, use the tap water cooling coil, listed on page 26, or Model 1102 ambient bath cooler listed on page 22.

For below ambient work, add the Flow-Through Cooler Models 1106 or 1108, or Immersion Probe Cooler Models 1107 or 1109 listed on page 22.

Ideal For: *Calibration • Desitometers • Enzyme Assays • HPLC Columns DNA Melting Curves • Kinetic Research • Specific Gravity Determinations Temperature Gradients • Polymer Testing • Spectrophotometer Flow Cells Viscosity Measurements*



6 Liter Model Heating



Specifications For Programmable Models	Model 1137P	Model 1137-1P	Model 1137-2P
Temperature Range / Stability	5°C above ambient to 200°C / ±0.5°C	5°C above ambient to 150°C / ±0.5°C	
Controller / Readout / Accuracy	Programmable / Graphics LCD, °C or °F / ±0.25°C		
Reservoir Capacity	6 liters	13 liters	28 liters
Heater	1100 Watt (120V models), 2200 Watt (240V models)		
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.		
Suction Flow Rate	5-speed, 8 to 18 liters/min.		
Safety Cutoff	Adjustable Over-Temperature and Low-Liquid Cutoff		
Working Access, L x W x D	5-1/4 x 5-1/4 x 5-1/2 in. 13.3 x 13.3 x 14 cm	5-1/4 x 8-1/2 x 8 in. 13.3 x 21.6 x 19.7 cm	12-1/8 x 10-3/8 x 8 in. 30.8 x 26.4 x 20.3 cm
Overall Dimensions, L x W x H	14-3/4 x 8-1/4 x 14 in. 37.5 x 21 x 35.5 cm	15-1/2 x 10-7/8 x 14-3/4 in. 39 x 27.5 x 37.5 cm	22-3/4 x 13-3/16 x 14-3/4 in. 55.8 x 33.5 x 37.5 cm
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge		
Shipping Weight	27 lbs. / 12.2 kg	37 lbs. / 16.8 kg	47 lbs. / 21.3 kg
Cat. No. (120V, 60Hz, 10Amps)	**13271-156** $2490	**13271-168** $2645	**13271-180** $2815
Cat. No. (240V, 50Hz, 5Amps)	**13271-158** $2515	**13271-170** $2670	**13271-182** $2840

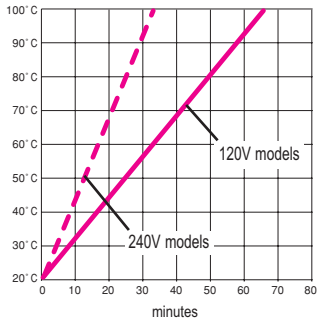
Note: Performance specifications determined at ambient temperature of 20°C/68°F.

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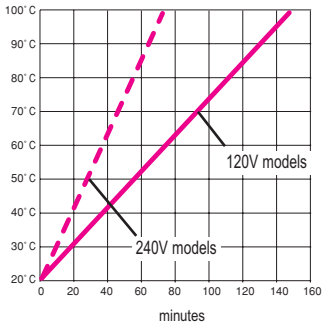




13 Liter Model Heating



28 Liter Model Heating



Specifications For Digital Models	Model 1136D	Model 1136-1D	Model 1136-2D
Temperature Range / Stability	5°C above ambient to 200°C / ±0.5°C	5°C above ambient to 150°C / ±0.5°C	
Controller / Readout / Accuracy	Digital / Graphics LCD, °C or °F / ±0.25°C		
Reservoir Capacity	6 liters	13 liters	28 liters
Heater	1100 Watt (120V models), 2200 Watt (240V models)		
Pressure Flow Rate	5-speed (Duplex Pump), 11 to 24 liters/min.		
Suction Flow Rate	5-speed, 8 to 18 liters/min.		
Safety Cutoff	Adjustable Over-Temperature and Low-Liquid Cutoff		
Working Access, L x W x D	5-1/4 x 5-1/4 x 5-1/2 in. 13.3 x 13.3 x 14 cm	5-1/4 x 8-1/2 x 8 in. 13.3 x 21.6 x 19.7 cm	12-1/8 x 10-3/8 x 8 in. 30.8 x 26.4 x 20.3 cm
Overall Dimensions, L x W x H	14-3/4 x 8-1/4 x 14 in. 37.5 x 21 x 35.5 cm	15-1/2 x 10-7/8 x 14-3/4 in. 39 x 27.5 x 37.5 cm	22-3/4 x 13-3/16 x 14-3/4 in. 55.8 x 33.5 x 37.5 cm
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge		
Shipping Weight	23 lbs. / 10.4 kg	33 lbs. / 15 kg	43 lbs. / 19.5 kg
Cat. No. (120V, 60Hz, 10 Amps)	**13271-152** $2025	**13271-164** $2070	**13271-176** $2265
Cat. No. (240V, 50Hz, 5 Amps)	**13271-154** $2050	**13271-166** $2095	**13271-178** $2295

Note: Performance specifications determined at ambient temperature of 20°C/68°F.

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VWR Standard and Analog Controllers

These economical controllers are perfect for applications that require less critical control.

The Standard Controller offers digital set and read to 0.1°C, three user-defined temperature preset buttons and microprocessor control. The Analog Controller, available on selected models, offers temperature readout via the supplied thermometer. See details on page 5.





VWR Refrigerated/Heating Circulating Baths, 6 Liter, Low Profile Design

- Convenient for Shelf Placement
- Work Space on Bath Top
- Use on Mobile Carts



Temperature range, cooling capacity and pumping along with the low profile design can be placed on a shelf to free up bench space while having eye-level access to the controls. On the benchtop, the lower profile permits easier access to the reservoir.

Extra space on the stainless steel top can be used as an additional work area. The wider footprint offers stability for calibration work or where mobility on a cart is necessary.

Standard Model 1140S. Designed for routine use up to 150°C, this model economically delivers the same cooling as more expensive models. The convenient read-and-set LED display plus stability of 0.05°C meets most requirements. The pump is a 2-speed simplex pump for closed loop applications.

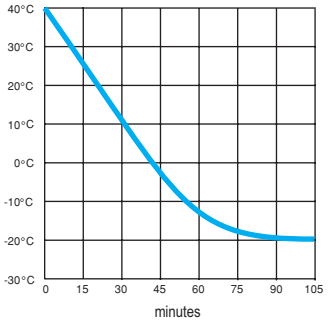
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Calibration • Chromatography Columns • Densitometers Distillation Condensers • Electrophoresis Apparatus • Polarimeters General Laboratory Cooling • Isoelectric Focusing • Refractometers Rotary Evaporators • Spectrophotometers • Viscometers*

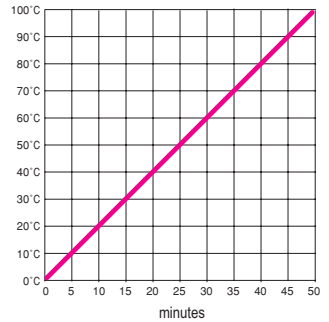
Specifications	Model 1140S
Temperature Range / Stability	-20° to 150°C / ±0.05°C
Controller / Readout / Accuracy	Standard / LED, °C or °F / ±0.5°C
Reservoir Capacity	6 liters
Cooling Capacity	200 Watts @ +20°C, 140 Watts @ 0°C, 100 Watts @ -10°C
Heater	1100 Watt (120V models), 1600 Watt (240V models)
Pressure Flow Rate	2-speed (Simplex Pump), 9 or 15 liters/min.
Safety Cutoff	Adjustable Over-Temperature & Low-Liquid Cutoff
Working Access, L x W x D	5-1/4 x -5-1/4 x 5-1/2 in. / 13.3 x 13.3 x 14 cm
Overall Dimensions, L x W x H	15-3/4 x 18-3/4 x 17 in. / 40 x 47.6 x 43.2 cm
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge
Shipping Weight	65 lbs. / 29.5 kg
Cat. No. (120V, 60Hz, 10Amps)	**13271-086** $2045
Cat. No. (240V, 50Hz, 5Amps)	**13271-088** $2070

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Refrigerated/Heating Circulating Baths, 6 Liter, Space-Saving Design

- Most Popular Design
- Saves Bench Space, Only 8-1/4 in. Wide
- Enhanced Cooling Capacity
- Quiet Operation





Featuring a 6-liter reservoir in a vertical design, these space-saving units' small footprint, 8-1/4 inches (21cm) wide, help conserve precious bench space.

The refrigeration system is designed to be used below 60°C. This allows rapid bath cooling from 60°C or lower, plus maximizes temperature control and reduces energy consumption above 60°C. The hermetically sealed compressor is designed for years of maintenance-free use.

Standard Model 1160S. With great cooling capacity, this space saver combines high performance and economy. The bright LED display provides convenient read and set capability plus stability of ±0.05°C meets most requirements. Frequently used for electrophoresis cells, viscometers and general lab cooling.

Analog Controller Model 1162A has the same cooling capability as the Model 1160S. With a stability of ± 0.2°C, it is perfect for routine lab applications where highest accuracy and stability are not critical. An excellent alternative to tap water cooling for rotary evaporators and condensers at a low price. Convenient skirted dial with thermometer readout.

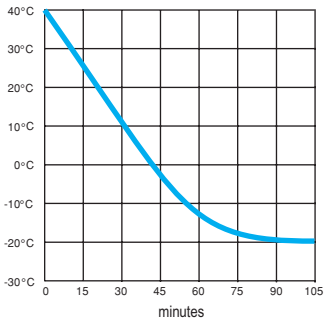
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Calibration • Chromatography Columns • Densitometers • Distillation Condensers Electrophoresis Apparatus • Polarimeters • General Laboratory Cooling • Isoelectric Focusing Refractometers • Rotary Evaporators • Spectrophotometers • Viscometers*

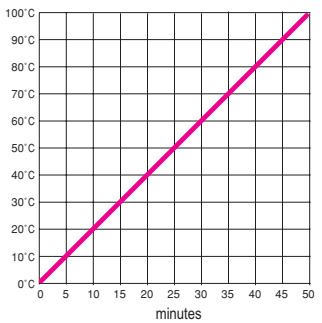
Specifications	Model 1160S	Model 1162A
Temperature Range / Stability	-20° to 150°C / ±0.05°C	-20° to 100°C / ±0.2°C
Controller / Readout / Accuracy	Standard / LED, °C or °F / ±0.5°C	Analog / Thermometer / N/A
Reservoir Capacity	6 liters	
Cooling Capacity	200 Watts @ +20°C, 140 Watts @ 0°C, 100 Watts @ -10°C	
Heater	1100 Watt (120V models), 1600 Watt (240V models)	
Pressure Flow Rate	2-speed (Simplex Pump), 9 or 15 liters/min.	
Safety Cutoff	Adjustable Over-Temperature & Low-Liquid Cutoff	
Working Access, L x W x D	5-1/4 x 5-1/4 x 5-1/2 in. / 13.3 x 13.3 x 14 cm	
Overall Dimensions, L x W x H	15-3/4 x 8-1/4 x 22-1/2 in. / 40 x 21 x 57.1 cm	
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge	
Shipping Weight	62 lbs. / 28 kg	
Cat. No. (120V, 60Hz, 10Amps)	**13271-074** $2045	**13271-070** $1775
Cat. No. (240V, 50Hz, 5Amps)	**13271-076** $2070	**13271-072** $1800

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Refrigerated/Heating Circulating Baths, 13 Liters, Low Temperature -30°C, and 13 Liters, Extra-Low Temperature -40°C

- Very Powerful Cooling
- Two Models with Excellent Heat Removal
- Enlarged Access Opening
- Ample Reservoir for Sample Immersion



The **Standard Model 1150S** has excellent heat removal over a broad temperature range combined with a large reservoir. The **Standard Model 1190S** circulators provide exceptional cooling, down to a temperature of -40°C and a large 13 liter reservoir.

Both these models have a +150°C upper temperature limit with excellent cooling capacity. Refrigeration can be used at high temperatures to cool the bath quickly. It is particularly useful where high heat removal is needed at closer to ambient temperature.

The 2-speed simplex pump is suitable for closed loop applications. Microprocessor controller with LED set-and-read at a price comparable to less convenient analog controllers make these models an excellent value. Both models feature outstanding stability as well as redundant over temperature and low liquid level protection.

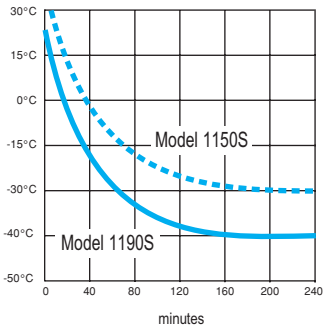
Controllers described on pages 4-5. Accessories listed on page 26.

Ideal For: *Low Temperature Calibration • Low Temperature Reactions • Cell Freezing Cloud & Pour Point Testing • Distillation Condensers • General Laboratory Cooling Rotary Evaporators • Spectrophotometers • Viscosity Studies*

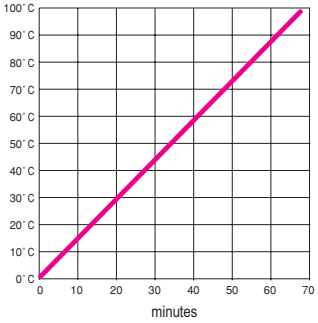
Specifications	Model 1150S	Model 1190S
Temperature Range / Stability	-30° to 150°C / ±0.05°C	-40° to 150°C / ±0.05°C
Controller / Readout / Accuracy	Standard / LED, °C or °F / ±0.5°C	
Reservoir Capacity	13 liters	
Cooling Capacity	660 Watts @ +20°C 480 Watts @ 0°C, 240 Watts @ -20°C	900 Watts @ +20°C 825 Watts @ 0°C, 200 Watts @ -30°C
Heater	1100 Watt (120V models), 1600 Watt (240V models)	
Pressure Flow Rate	2-speed (Simplex Pump), 9 or 15 liters/min.	
Safety Cutoff	Adjustable Over-Temperature & Low-Liquid Cutoff	
Working Access, L x W x D	6 x 11 x 5-1/2 in. / 15.2 x 28 x 14 cm	
Overall Dimensions, L x W x H	17 x 15-1/2 x 24-3/4 in. / 43 x 39.4 x 62.9 cm	
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge	
Shipping Weight	143 lbs. / 65 kg	140 lbs. / 63.5 kg
Cat. No. (120V, 60Hz, 12Amps)	**13271-098** $2315	**13271-110** $2880
Cat. No. (240V, 50Hz, 6Amps)	**13271-100** $2340	**13271-112** $2905

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Refrigerated/Heating Circulating Baths, 28 Liter

- Temperatures to -25°C
- Work Space on Top with Big Access Opening
- Reservoir Holds More or Larger Samples

The **Standard Model 1180S's** large access reservoir of 10-1/4 x 10-1/4 inches allows convenient immersion of larger or more samples. The 28 liter capacity also helps to maintain precise temperature control and compensate for sudden heat load changes.

Refrigeration can be used at high temperatures to cool the bath quickly. This model features excellent stability, and redundant over temperature and low liquid level protection.

The 2-speed simplex pump satisfies many applications having a closed loop configuration. Microprocessor controller with convenient LED set-and-read delivers excellent performance at a modest price.

Controllers described on pages 4-5. Accessories listed on page 26.

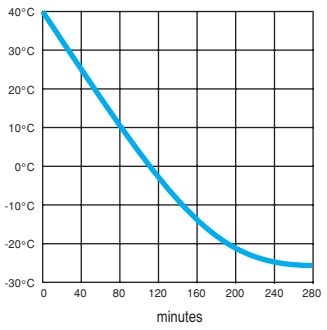


Ideal For: *Low Temperature Calibration • Cell Freezing • Viscosity Studies Rotary Evaporators • Low Temperature Reactions • Distillation Condensers Cloud & Pour Point Testing • General Laboratory Cooling • Spectrophotometers*

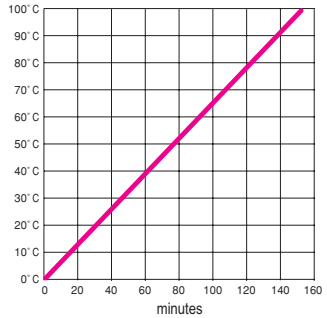
Specifications	Model 1180S
Temperature Range / Stability	-25° to 150°C / ±0.05°C
Controller / Readout / Accuracy	Standard / LED, °C or °F / ±0.5°C
Reservoir Capacity	28 liters
Cooling Capacity	700 Watts @ +20°C, 510 Watts @ 0°C, 260 Watts @ -20°C
Heater	1100 Watt (120V models), 1600 Watt (240V models)
Pressure Flow Rate	2-speed (Simplex Pump), 9 or 15 liters/min.
Safety Cutoff	Adjustable Over-Temperature & Low-Liquid Cutoff
Working Access, L x W x D	10-1/4 x 10-1/4 x 10-1/4 in. / 26 x 26 x 26 cm
Overall Dimensions, L x W x H	19-1/2 x 27-1/2 x 18-1/2 in. / 49.5 x 70 x 47 cm
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge
Shipping Weight	160 lbs. / 72.6 kg
Cat. No. (120V, 60Hz, 12Amps)	**13271-122** $2585
Cat. No. (240V, 50Hz, 6Amps)	**13271-124** $2610

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

Cooling



Heating



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VWR Immersion & Flow-Through Cooler

- Compact Package
- Designed For Continuous Low Cost Operation
- Replaces Dry Ice or Liquid Nitrogen



These coolers provide low temperature capabilities for non-refrigerated circulators and baths, for additional cooling capacity, and for replacing dry ice or liquid nitrogen. These units run at maximum cooling rate. Temperature control should be provided by an external circulator.

Immersion coolers are excellent for trapping and dewar-type applications, and reduce the expense of using dry ice or liquid nitrogen. Three feet of flexible hose allows convenient placement of the cooling probe.

Flow-through models must be used in-line with a circulator pump. The high cooling efficiency of the flow-through heat exchanger requires anti-freeze solution in the circulating system.

Specifications	Model 1107	Model 1109	Model 1106	Model 1108
Style	Immersion		Flow-Through	
Temperature Range	-35°C to 40°C	-45°C to 40°C	-20°C to 40°C	-25°C to 40°C
Cooling Capacity @ -30°C 20°C	140 Watts 975 Watts	265 Watts 1050 Watts	200 Watts 575 Watts	260 Watts 745 Watts
Probe Coil diameter x length	1-1/2 dia. x 4 in. 3.8 dia. x 10.2 cm	3 dia. x 9-1/4 in. 7.6 dia. x 23.5 cm	—N/A— —N/A—	
Inlet & Outlet Size	—N/A—		3/8 in. FPT	
Dimension, L x W x H	17 x 14 x 14 in. / 43.2 x 35.6 x 35.6 cm			
Shipping Weight	76 lbs. / 34.5 kg	82 lbs. / 37.3 kg	72 lbs. / 32.6 kg	78 lbs. / 35.5 kg
Cat. No. (120V, 60Hz, 5Amp)	**13271-500** $1320	**13271-504** $1470	**13271-506** $1195	**13271-502** $1390

Note: Cooling capacity, Watts x 3.41 = BTUs/hr. Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

VWR Model 1102 Ambient Bath Cooler



- Aids in Closer-to-Ambient Operation
- Rapidly Cools High Temperature Fluids

Heating circulators can normally control within 5° to 15°C above ambient. When connected to a heating circulator, this air-cooled heat exchanger rapidly cools down fluids from high temperatures, and allows a circulator to control within 2°C of ambient.

A 2-speed fan allows choice of cooling rates. An external pumping source such as a heating circulator is required. Wetted parts are brass and copper.

Temperature Range	Up to 200°C
Inlet & Outlet Fittings	1/4 in. FPT
Overall Dimensions, L x W x H	8 x 9 x 11-1/2 in. / 23 x 20 x 29 cm
Shipping Weight	12 lbs. / 5.5 kg
Cat. No. (120V, 60Hz, 0.4Amps)	**13271-066** $315
Cat. No. (240V, 50Hz, 0.2Amps)	**13271-069** $335

VWR Model 1104 Heating Recirculator



- Low Cost Pumping & Heating
- Open or Closed Loop Applications

Connect a Model 1104 to a tank or system for low-cost, accurate temperature control.

Great for routine applications such as thawing media or plasma. The sealed reservoir allows use with open tanks or closed loop applications. Fittings for 1/2 in. i.d. tubing allow for easy installation. Wetted parts are stainless steel, PVC, brass and nylon.

Temperature Range, Stability	Ambient to 70°C, ±0.2°C
Reservoir Capacity	0.5 liter
Heater	750 Watts
Pumping	100 gal/hr
Safety Cutoffs	Adjustable Over-Temperature & Low Liquid
Overall Dimensions, L x W x D	8 x 9-1/2 x 8 in. / 20 x 24 x 20 cm
Shipping Weight	12 lbs. / 5.5 kg
Cat. No. (120V, 60Hz, 6.6Amps)	**13271-060** $660
Cat. No. (240V, 50Hz, 3.3Amps)	**13271-063** $685

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VWR Heating Immersion Circulators

- Economical and Easy-to-Read Controllers
- Two Selectable Pump Speeds
- Dual-Safety Protection Standard

Design your own circulating bath with a VWR Immersion Circulator. These circulators clamp on to either a standard lab stand or walls of a tank up to 1-13/16 inch thick. The 2-speed pressure (simplex) pump minimizes turbulence in small tanks and provides higher flow and greater uniformity in large tanks. An adjustable flow director accepts 1/2 inch (13mm) tubing for external circulation.

Standard Model 1122S. The PID controller provides precise temperature control and greater temperature stability. The adjustable PID parameters give greater precision. It comes standard with three user-defined temperature preset buttons for your most commonly used applications.

Low Cost Analog Model 1112A. Analog Controller offers good temperature control for routine lab applications. Proportional heater control combined with redundant safety backup makes this analog model an excellent value. Monitor your bath's temperature via the supplied thermometer.

Controllers described on pages 4-5. Accessories listed on page 26. Open Bath Systems described on page 15.



Model 1122S


Model 1112A

Ideal For: *Bacteriological Incubation • Calibration • Kinetic Research • Cell Culture Enzyme Assays • Tempering Samples • Thawing Frozen Specimens • Viscosity Studies Warming Culture Media*

Specifications	1122S	1112A
Temperature Range / Stability	Amb.+5°C to 150°C* / ±0.05°C*	Amb.+5°C to 100°C* / ±0.2°C*
Controller / Readout	Standard / LED °C or °F	Analog / Thermometer
Heater	1100 Watts (120V models), 1600 Watts (240V models)	
Pumping Pressure	2-speed (Simplex pump) 9 or 15 liters/min.	
Tank Occupancy, approx.	6-1/2 x 4-3/4 in. / 16.5 x 12 cm	
Immersion, minimum to maximum	3 in. to 7 in. / 7.6 cm to 17.8 cm	
Overall Dimensions L x W x D	6 x 4-3/4 x 13 in. / 15.2 x 12 x 33 cm	
Shipping Weight	9 lbs. / 4 kg	
Cat. No. (120V, 50-60Hz, 9Amps)	**13271-138** $1220	**13271-134** $725
Cat. No. (240V, 50-60Hz, 4.5Amps)	**13271-140** $1245	**13271-136** $755

* Temperature range and stability vary depending on bath volume, surface area, insulation and type of fluid.

Note: Performance specifications determined at ambient temperature of 20°C/68°F.

TECH TIP

Selectable Pump Speed Advantages:

Slow Speed
- ✔Quieter Operation
- ✔Longer Motor Life
- ✔Minimizes Bath Turbulence

Faster Speed
- ✔Responds Quickly To Changes
- ✔Pumps To Multiple Systems
- ✔Better Flow In Small Tubing

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VWRbrand Heating Circulating Baths

- Above-Ambient Temperature Control
- Larger Access Area
- Compact Design
- Carrying Handles on the 13L and 28L for Easy Placement

These above-ambient temperature heating circulators allow larger or more samples, while maintaining excellent stability specifications.

Standard Controller, Models 1130S, 1130-1S and 1130-2S. Microprocessor controller with LED set-and-read at an attractive price makes this model an excellent overall value. The bright LED display is easy to read and continuously displays actual temperature. Set temperature is displayed at the touch of a button. The 2-speed pressure (simplex) pump is used for closed loop applications.

Controllers described on pages 4-5. Accessories listed on page 26.

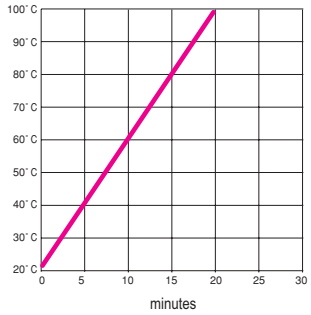
For operation closer to ambient, use the tap water cooling coil listed on page 26 or Model 1102 ambient bath cooler listed on page 22.

For below ambient work, add the Flow-Through Cooler Models 1106 or 1108, or Immersion Probe Cooler Models 1107 or 1109 listed on page 22.

Ideal For: *Bacteriological Incubation • Calibration • Cell Culture Kinetic Research • Enzyme Assays • Warming Culture Media Tempering Samples • Thawing Frozen Specimens • Viscosity Studies*



6 Liter Model Heating





TECH TIP

High Temperature Precautions:

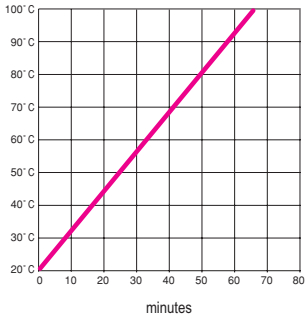
- ✔Select a fluid with a flashpoint well above your operating temperature.
- ✔Silicone oils are preferred over mineral oils which may smoke or burn.
- ✔Place circulator in a fume hood if noxious vapors may be present.
- ✔Use high temperature tubing and tubing adapters. See pg. 26.

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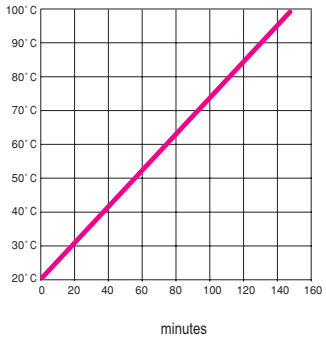




13 Liter Model Heating



28 Liter Model Heating



Specifications For Standard Models	Model 1130S	Model 1130-1S	Model 1130-2S
Temperature Range / Stability	5°C above ambient to 150°C / ±0.05°C		
Controller / Readout / Accuracy	Standard / LED, °C or °F / ±0.5°C		
Reservoir Capacity	6 liters	13 liters	28 liters
Heater	1100 Watt (120V models), 1600 Watt (240V models)		
Pressure Flow Rate	2-speed (Simplex Pump), 7 or 15 liters/min.		
Safety Cutoff	Adjustable Over-Temperature and Low-Liquid Cutoff		
Working Access, L x W x D	5-1/4 x 5-1/4 x 5-1/2 in. 13.3 x 13.3 x 14 cm	5-1/4 x 8-1/2 x 8 in. 13.3 x 21.6 x 19.7 cm	12-1/8 x 10-3/4 x 8 in. 30.8 x 26.4 x 20.3 cm
Overall Dimensions, L x W x H	14-3/4 x 8-1/4 x 14 in. 37.5 x 21 x 35.5 cm	15-1/2 x 10-7/8 x 14-3/4 in. 39.4 x 27.6 x 37.5 cm	22-3/4 x 13-3/16 x 14-3/4 in. 55.8 x 33.5 x 37.5 cm
Pump Inlet & Outlet	1/4 in. FPT Rear Discharge		
Shipping Weight	21 lbs. / 9.5 kg	31 lbs. / 14 kg	43 lbs. / 19.5 kg
Cat. No. (120V, 60Hz, 10Amps)	**13271-148** $1530	**13271-160** $1575	**13271-172** $1760
Cat. No. (240V, 50Hz, 5Amps)	**13271-150** $1555	**13271-162** $1600	**13271-174** $1785

Note: Performance specifications determined at ambient temperature of 20°C/68°F. For 50Hz units, derate cooling capacity by 17%.

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Remote Probes for VWR Signature® Series models only. Use in remote locations - such as open tanks - for superior temperature control. Compensates for heat losses through tubing between the circulator and control point. RTD sensor in 3/16 in. stainless steel sheath.

Description	Cat. No.	Price
External Probe, 10 ft. (3m)	**13270-650**	$155.00
External Probe, 25 ft. (7.6m)	**13270-655**	$165.00
External Probe, 50 ft. (15.2m)	**13270-660**	$185.00



Cooling Coils. For auxiliary cooling of circulators. Reduces minimum operating temperature when connected to a water source.

Description	Cat. No.	Price
Cooling Coil for 1130, 1136, 1137 Series	**13270-700**	$79.00
Cooling Coil for Models 1112, 1122	**13270-722**	$79.00



VWR® Bath Fluids. These heat transfer fluids provide superior thermal stability over their temperature ranges. Check bath compatibility before using. Compatible with stainless steel, not compatible with Buna® or natural rubber.

Description	Temperature Range	Flash Point @ 25°C	Viscosity	Size	Cat. No.	Price
510 Fluid	50° to 150°C	274°C	50 cs	1gal	**13270-794**	$575.00
550 Fluid	100° to 200°C	315°C	125 cs	1gal	**13272-037**	$450.00
710 Fluid	150° to 250°C	302°C	500 cs	1gal	**13270-792**	$500.00
Dynalene™ HC-50	-50° to 60°C	NONE	3 cs	1gal	**13272-034**	$132.00



VWR Clear Bath Algicide. General purpose laboratory algicide. Keeps water baths clean, odor-free, and resistant to black algae. Stainless steel compatible. Use 10-15 drops per gallon to control & prevent algae growth. 8 oz. dispenser bottle treats approx. 400 gallons (1514 L).

Cat. No. **13272-031** $36.30 each, $434.90 Case of 12

Analog Adapter. For use with programmable VWR Signature controllers when direct digital control is not required. Plugs into RS-232 port and provides 10mV/degree analog signal for external monitoring or control.

Cat. No. **13270-665** $320.00

VWR Bath Cleaner. A concentrated liquid for cleaning and removing rust and mineral deposits. For use with stainless steel and plastic baths. Helps remove existing algae prior to treatment with Clear Bath Algicide. 1 oz. (33.8mL) treats approx. 2 gal (8 L). 16 oz. (540.8mL) plastic dispenser bottle.

Cat. **No.13400-060** $23.00

External Pressure Reducer. For chillers equipped with high pressure positive displacement pump. Reduces output of chiller to adjustable range of 10-45 psi.

Cat. No. **13270-702** $300.00

High Temperature Tubing. 3 feet (0.93m) flexible Teflon™ lined, stainless steel overbraid tubing with 1/4 in. quick connects at both ends. For use up to 230°C.

Cat. No. **13270-868** $85.00

Low Temperature Insulated Tubing. Minimizes temperature loss from circulator to external device. 6 feet (1.9m) of 1/2 in. (1.27cm) I.D. Buna N tubing with foam insulation.

Cat. No. **13270-707** $17.00

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Temperature Control Equipment At-a-Glance Selection Guide

Model	Temperature Range	Cooling Capacity Watts @ 20°C	Stability	Controller Type	Reservoir Capacity	Readout	Catalog Number	Page
1147P	-20°C to + 200°C	210 Watts	± 0.01°C	Programmable	6 liters	Graphics LCD	**13271-094**	6
1146D	-20°C to +200°C	210 Watts	± 0.01°C	Digital	6 liters	Graphics LCD	**13271-090**	6
1140S	-20°C to +150°C	210 Watts	± 0.05°C	Standard	6 liters	LED	**13271-086**	18
1167P	-20°C to +200°C	210 Watts	± 0.01°C	Programmable	6 liters	Graphics LCD	**13271-082**	7
1166D	-20°C to +200°C	210 Watts	± 0.01°C	Digital	6 liters	Graphics LCD	**13271-078**	7
1160S	-20°C to +150°C	210 Watts	± 0.05°C	Standard	6 liters	LED	**13271-074**	19
1162A	-20°C to +100°C	210 Watts	± 0.2°C	Analog	6 liters	Thermometer	**13271-070**	19
1157P	-30°C to +200°C	690 Watts	± 0.01°C	Programmable	13 liters	Graphics LCD	**13271-106**	8
1156D	-30°C to +200°C	690 Watts	± 0.01°C	Digital	13 liters	Graphics LCD	**13271-102**	8
1150S	-30°C to +150°C	690 Watts	± 0.05°C	Standard	13 liters	LED	**13271-098**	20
1187P	-25°C to +100°C	700 Watts	± 0.01°C	Programmable	28 liters	Graphics LCD	**13271-130**	9
1186D	-25°C to +100°C	700 Watts	± 0.01°C	Digital	28 liters	Graphics LCD	**13271-126**	9
1180S	-25°C to +100°C	700 Watts	± 0.05°C	Standard	28 liters	LED	**13271-122**	21
1197P	-45°C to +200°C	700 Watts	± 0.01°C	Programmable	13 liters	Graphics LCD	**13271-118**	10
1196D	-45°C to +200°C	700 Watts	± 0.01°C	Digital	13 liters	Graphics LCD	**13271-114**	10
1190S	-45°C to +150°C	700 Watts	± 0.05°C	Standard	13 liters	LED	**13271-110**	20
1127P	Ambient +5°C to +200°C	—	± 0.01°C	Programmable	—	Graphics LCD	**13271-142**	14
1122S	Ambient +5°C to +150°C	—	± 0.05°C	Standard	—	LED	**13271-138**	23
1112A	Ambient +5°C to +100°C	—	± 0.2°C	Analog	—	Thermometer	**13271-134**	23
1137P	Ambient +5°C to +200°C	—	± 0.01°C	Programmable	6 liters	Graphics LCD	**13271-156**	16
1136D	Ambient +5°C to +200°C	—	± 0.01°C	Digital	6 liters	Graphics LCD	**13271-152**	17
1130S	Ambient +5°C to +150°C	—	± 0.05°C	Standard	6 liters	LED	**13271-148**	24
1137-1P	Ambient +5°C to +150°C	—	± 0.01°C	Programmable	13 liters	Graphics LCD	**13271-168**	16
1136-1D	Ambient +5°C to +150°C	—	± 0.01°C	Digital	13 liters	Graphics LCD	**13271-164**	17
1130-1S	Ambient +5°C to +150°C	—	± 0.05°C	Standard	13 liters	LED	**13271-160**	24
1137-2P	Ambient +5°C to +150°C	—	± 0.01°C	Programmable	28 liters	Graphics LCD	**13271-180**	16
1136-2D	Ambient +5°C to +150°C	—	± 0.01°C	Digital	28 liters	Graphics LCD	**13271-176**	17
1130-2S	Ambient +5°C to +150°C	—	± 0.05°C	Standard	28 liters	LED	**13271-172**	24
1171MD/1171PD	-5°C to +40°C	750 Watts	± 0.5°C	Standard	6.25 liters	LED	**13271-184/188**	12
1173MD/1173PD	-5°C to +40°C	1320 Watts	± 0.5°C	Standard	6.25 liters	LED	**13271-192/196**	12
1175MD/1175PD	-10°C to +40°C	1150 Watts	± 0.5°C	Standard	6.25 liters	LED	**13271-200/204**	12
1177MD/1177PD	-15°C to +40°C	2500 Watts	± 0.5°C	Standard	6.25 liters	LED	**13271-208/212**	12
1179MD/1179PD	-15°C to +40°C	2850 Watts	± 0.5°C	Standard	6.25 liters	LED	**13271-216/220**	12
117-6155P	5°C to 35°C	5200 Watts	± 0.5°C	Standard	19 liters	LED	**13271-216/220**	13
117-612	-10°C to +40°C	390 Watts	± 0.2°C	Analog	0.4 liters	—	**13271-216/220**	13
1102	Up to 200°C	—	—	—	—	—	**13271-066**	22
1104	Ambient to 70°C	750 Watts	± 0.2°C	Analog	—	—	**13271-060**	22
1106	-20°C to +40°C	575 Watts	—	Flow Through	—	—	**13271-506**	22
1108	-25°C to +40°C	745 Watts	—	Flow Through	—	—	**13271-502**	22
1107	-35°C to +40°C	975 Watts	—	Immersion Probe	—	—	**13271-500**	22
1109	-45°C to +40°C	1050 Watts	—	Immersion Probe	—	—	**13271-504**	22

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