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## AB BL14-10D

# AB Plate Heat Exchanger User Manual

Model: BL14-10D

## 1. INTRODUCTION

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This manual provides essential information for the safe and efficient installation, operation, and maintenance of the AB Plate Heat Exchanger. This 3"x8" model with 10 plates is designed for water-to-water heat transfer applications, featuring a durable construction of 316L stainless steel brazed with 99.9% copper.

Please read this manual thoroughly before attempting any installation or operation to ensure proper function and longevity of the unit.

## 2. SAFETY INFORMATION

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Adherence to safety guidelines is crucial for preventing injury and damage to the equipment. Always follow local codes and regulations.

- **Pressure and Temperature Limits:** This heat exchanger is designed for water-to-water heat exchanging only, under a maximum operating pressure of 435 PSI and a maximum operating temperature of 400°F (204°C). Do not exceed these limits.
- **Professional Installation:** Installation should be performed by a qualified professional in accordance with all applicable plumbing and HVAC codes.
- **System Compatibility:** Ensure the heat exchanger is compatible with your existing system's materials and operating conditions.
- **Leak Checks:** After installation, thoroughly check all connections for leaks before operating the system at full pressure.
- **Protective Gear:** Always wear appropriate personal protective equipment (PPE) during installation and maintenance.

## 3. PRODUCT OVERVIEW

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The AB Plate Heat Exchanger is a compact and highly efficient device designed for transferring heat between two fluids without mixing them. It consists of multiple thin, corrugated stainless steel plates brazed together, creating a series of channels for the fluids to flow through.

### 3.1 Key Features

- **Premium Quality:** Constructed from high-quality 316L stainless steel plates brazed with 99.9% copper for durability, leak resistance, and high pressure/temperature tolerance.
- **Efficient Heat Transfer:** Highly conductive and super-thin stainless steel plates ensure excellent performance for heating and cooling applications.
- **Energy Saving:** Operates without electricity or oxygen consumption, contributing to energy efficiency.
- **Easy Installation:** Features smooth threads for quick and flexible hookup.
- **Versatile Applications:** Suitable for domestic water heating, floor heating, snow melting, district or zone heating systems, outdoor wood furnaces, hydraulic and lube oil coolers, radiator heating, hydronic heating, and solar heating.

### 3.2 Components and Design

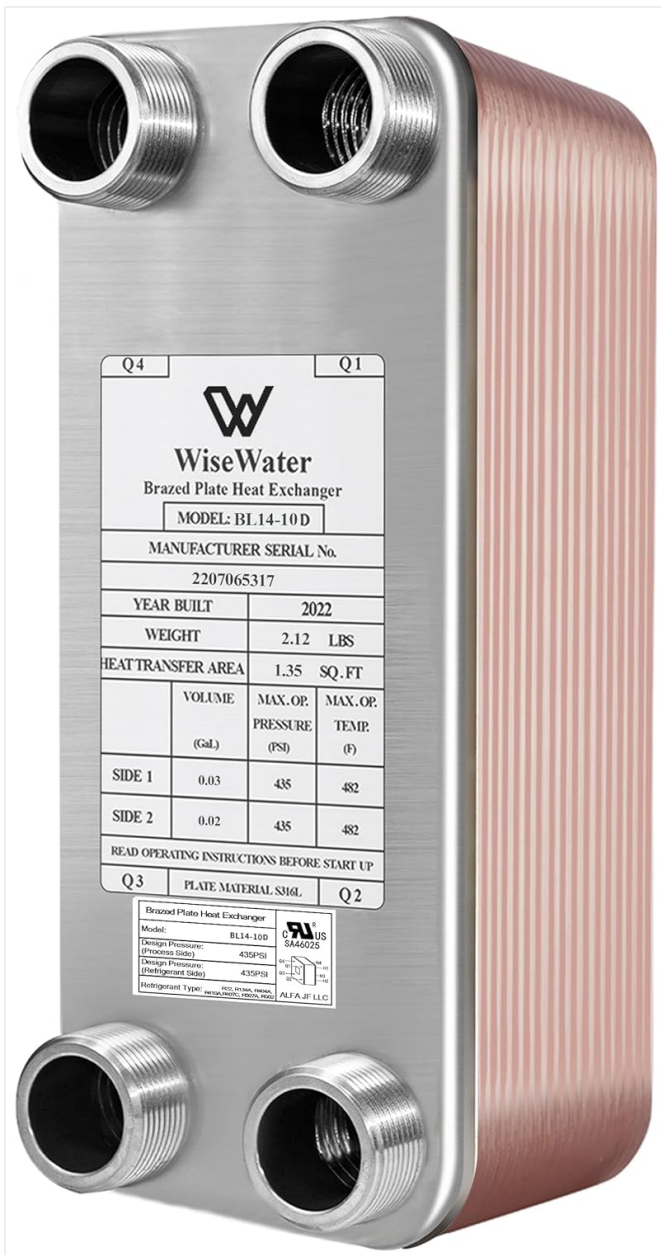
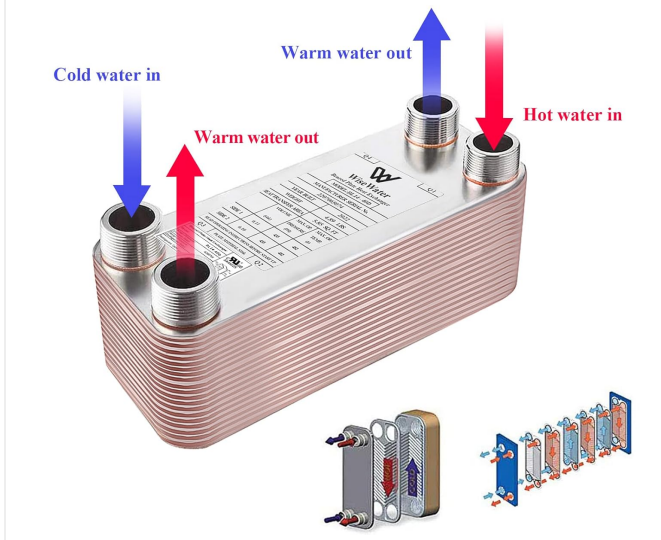


Figure 3.2.1: Front view of the AB Plate Heat Exchanger, showing the label with model number BL14-10D, weight, heat transfer area, and maximum operating parameters for both sides.

## Heat Exchanger Principle



**Figure 3.2.2:** Principle of operation, showing how cold and hot water flow through alternating channels to exchange heat without mixing. Cold water enters one side and exits warm, while hot water enters the other side and exits warm.

## 316 Stainless Steel, Copper Brazed

- 1.Elegant Appearance
- 2.Rust Resistance
- 3.Smooth Thread for Installation



**Figure 3.2.3:** Detail of the 316 Stainless Steel and Copper Brazed construction, highlighting rust resistance and smooth 3/4" NPT threads for installation. Dimensions are approximately 7.87" (length) x 2.8" (width).

## Multiple Applications

- Homebrew Chiller
- Water Heating
- Central Heating
- Floor Heating
- Driveway Snow Melting
- Radiator Heating
- Solar Heating
- HVAC Heating & Cooling



**Figure 3.2.4:** Overview of the multiple applications for which this heat exchanger is suitable, demonstrating its versatility in various heating and cooling systems.

## 4. SETUP AND INSTALLATION

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Proper installation is critical for the performance and longevity of your heat exchanger. Refer to Figure 3.2.2 for understanding fluid flow paths.

1. **Location Selection:** Choose a location that allows for easy access for installation, maintenance, and inspection. Ensure adequate clearance around the unit.
2. **Mounting:** Securely mount the heat exchanger using appropriate brackets or supports. While mounting brackets are not included, ensure the unit is stable and level.
3. **Piping Connections:** Connect the piping to the 3/4" MPT (Male Pipe Thread) ports. Ensure all connections are tight and sealed to prevent leaks. Use thread sealant suitable for your system's fluids and temperatures.
4. **Fluid Flow Direction:** Observe the correct flow direction as indicated in Figure 3.2.2. Typically, the two fluids flow in opposite directions (counter-flow) for maximum heat transfer efficiency.
5. **System Flushing:** Before initial operation, flush the entire system to remove any debris or air.
6. **Pressure Testing:** After installation, perform a pressure test on the system to check for leaks at all connections. Do not exceed the maximum operating pressure of 435 PSI.

For specific system designs (e.g., hydronic heating, solar heating), consult with an HVAC professional to ensure optimal integration and performance.

## 5. OPERATING INSTRUCTIONS

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The AB Plate Heat Exchanger operates by facilitating heat exchange between two separate fluid circuits. No direct user interaction is required during normal operation once installed.

- **Fluid Circulation:** Ensure both fluid circuits (e.g., primary and secondary loops) have adequate flow rates. Refer to the specifications table for recommended flow rates.
- **Temperature and Pressure Monitoring:** Regularly monitor the temperatures and pressures within your system to ensure they remain within the specified operating limits (Max. Operating Pressure: 435 PSI, Max. Operating Temperature: 400°F / 204°C).

- **Efficiency:** The design of the brazed plates ensures high thermal efficiency. A noticeable drop in heat transfer efficiency may indicate a need for maintenance.

## 6. MAINTENANCE

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Regular maintenance helps ensure the long-term efficiency and reliability of your plate heat exchanger.

- **Inspection:** Periodically inspect the exterior of the heat exchanger for any signs of leaks, corrosion, or physical damage.
- **Cleaning:** Over time, mineral deposits or debris can accumulate within the plates, reducing efficiency. Depending on water quality and system usage, chemical cleaning (CIP - Clean-In-Place) may be necessary. Consult a professional for appropriate cleaning procedures and chemicals.
- **Pressure Relief Valves:** Ensure that pressure relief valves in your system are functioning correctly to prevent over-pressurization of the heat exchanger.

## 7. TROUBLESHOOTING

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This section provides guidance for common issues. For complex problems, contact a qualified technician.

Problem	Possible Cause	Solution
Reduced Heat Transfer Efficiency	Fouling (scale or debris buildup) inside plates; insufficient flow rates; air in the system.	Perform chemical cleaning (CIP); check and adjust pump flow rates; bleed air from the system.
Leaks at Connections	Improperly tightened fittings; damaged threads or sealant.	Tighten connections; reapply thread sealant; replace damaged fittings.
Unusual Noises	Air in the system; excessive flow velocity; cavitation.	Bleed air; reduce flow rate if too high; check system pressure.

## 8. SPECIFICATIONS

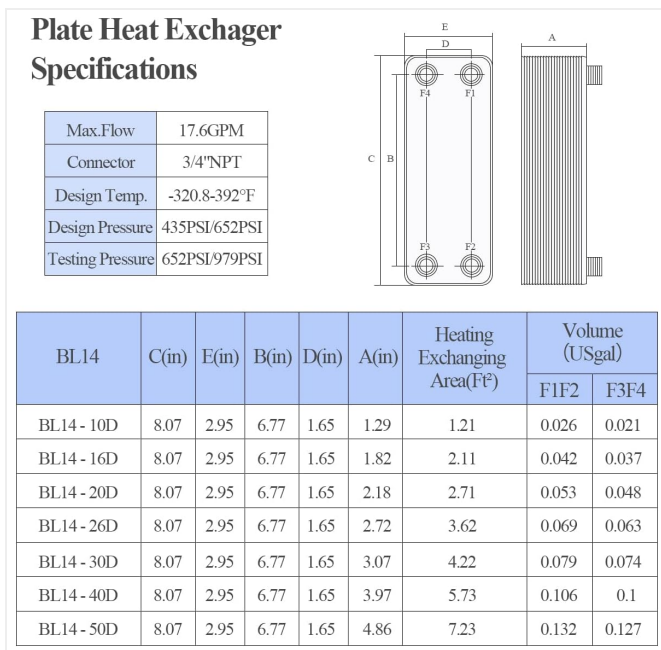
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Detailed technical specifications for the AB Plate Heat Exchanger, Model BL14-10D.

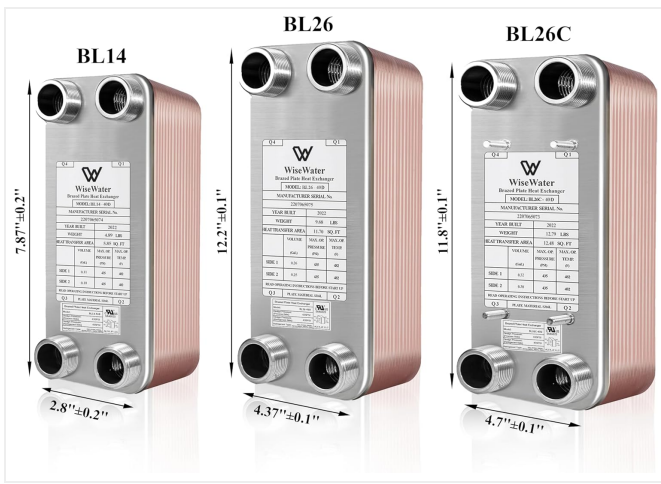
Attribute	Value
Brand	AB
Model Number	BL14-10D
Product Dimensions	3"W x 8"H
Item Weight	2.12 pounds
Maximum Operating Pressure	435 PSI

Attribute	Value
Maximum Temperature	482 Degrees Fahrenheit (250°C)
Maximum Flow Rate	5.6 Gallons Per Minute (GPM)
Efficiency	Highly Efficient
Special Features	Dry Combustion Protection, Flame Failure Protection, High Water Pressure Protection (Note: These features are typically for water heaters, not the heat exchanger itself. This might be a miscategorization in the source data, but included as per source.)
Material	316L Stainless Steel, Copper Brazed
Number of Plates	10 Plates
Connection Type	3/4" MPT

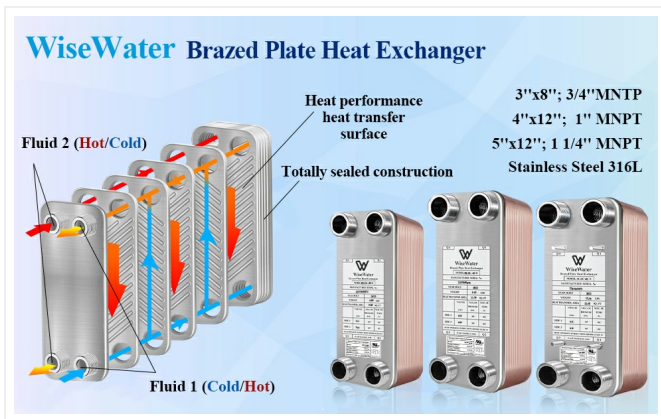
## 8.1 Dimensional and Performance Data



**Figure 8.1.1:** Detailed specifications table for BL14 series plate heat exchangers, including maximum flow rates, connector types, design temperatures, and pressures. It also provides dimensional data (C, E, B, D, A in inches) and heating exchanging area (Ft<sup>2</sup>) for various plate counts.



**Figure 8.1.2:** Visual comparison of different AB heat exchanger models (BL14, BL26, BL26C) showing their relative sizes and dimensions, useful for understanding product variations.



**Figure 8.1.3:** Hydronic Duty Table for BL14 series, providing performance data (boiler flow GPM, system flow GPM, kBtu/hr) for domestic hot water heating and floor heating applications across various plate counts.

SKU	Domestic hot water heating: Boiler water 180F-150F; Pipe water 40F-140F									
Specification	BL26C-10	BL26C-20	BL26C-30	BL26C-40	BL26C-50	BL26C-60	BL26C-70	BL26C-80	BL26C-90	
Boiler flow GPM	10	15	17	24	28	41	55	60	69	
System flow GPM	4	5	5	7	8	12	16	18	20	
kBtu/hr	200	251	251	357	401	601	802	902	1002	
Min. Operating Temp.	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F	
Max. Operating Temp.	482F	482F	482F	482F	482F	482F	482F	482F	482F	
Design Pressure:	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	
Test Pressure:	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	
SKU	Floor Heating: Boiler water 180F-150F; System water 100F-130F									
Specification	BL26C-10	BL26C-20	BL26C-30	BL26C-40	BL26C-50	BL26C-60	BL26C-70	BL26C-80	BL26C-90	BL26C-100
Boiler flow GPM	7	11	22.4	26.2	33	36	40	43	55	69
System flow GPM	7	11	22.4	26.2	33	36	40	43	55	69
kBtu/hr	104	163	333	380	490	535	594	639	817	1023
Min. Operating Temp.	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F
Max. Operating Temp.	482F	482F	482F	482F	482F	482F	482F	482F	482F	482F
Design Pressure:	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI
Test Pressure:	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI
SKU	Snow melting heating: Boiler water 180F-150F; Water/glycol-50% 110F-140F									
Specification	BL26C-10	BL26C-20	BL26C-30	BL26C-40	BL26C-50	BL26C-60	BL26C-70	BL26C-80		
Boiler flow GPM	10	11	17	24	31	34	38	48		
System flow GPM	11	12	19	27	34	38	42	53		
kBtu/hr	143	159	251	357	449	502	555	701		
Min. Operating Temp.	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F		
Max. Operating Temp.	482F	482F	482F	482F	482F	482F	482F	482F		
Design Pressure:	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI		
Test Pressure:	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI	63PSI		

**Figure 8.1.4:** Hydronic Duty Table for BL26 series, detailing performance metrics for domestic hot water heating, floor heating, and snow melting applications, including flow rates and heat output.

## Hydronic Duty Table

SKU	Domestic hot water heating: Boiler water 180F-150F; Pipe water 40F-140F						
Specification	BL14-10	BL14-16	BL14-20	BL14-26	BL14-30	BL14-40	BL14-50
Boiler flow GPM	4	7.5	9	12	14	16	18.8
System flow GPM	1.2	2.5	3	3.5	4	4.5	5.4
kBtu/hr	58	109	131	175	204	233	273
Min. Operating Temp.	-250F	-250F	-250F	-250F	-250F	-250F	-250F
Max. Operating Temp.	482F	482F	482F	482F	482F	482F	482F
Design Pressure:	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI
Test Pressure:	65PSI	65PSI	65PSI	65PSI	65PSI	65PSI	65PSI

SKU	Floor Heating: Boiler water 180F-150F; System water 100F-130F								
Specification	BL14-10	BL14-10	BL14-16	BL14-20	BL14-20	BL14-26	BL14-30	BL14-40	BL14-50
Boiler flow GPM	3.5	5.6	7.5	8.9	12.4	13.5	15.9	19	24.6
System flow GPM	3.5	5.6	7.5	8.9	12.4	13.5	15.9	19	24.1
kBtu/hr	91	81	111	132	184	201	236	282	375
Min. Operating Temp.	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F	-250F
Max. Operating Temp.	482F	482F	482F	482F	482F	482F	482F	482F	482F
Design Pressure:	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI	43PSI
Test Pressure:	65PSI	65PSI	65PSI	65PSI	65PSI	65PSI	65PSI	65PSI	65PSI



Figure 8.1.5: Hydronic Duty Table for BL26C series, presenting performance data for domestic hot water heating, floor heating, and snow melting, with specific flow rates and heat output for various configurations.

## 9. WARRANTY AND SUPPORT

The AB Plate Heat Exchanger comes with a **1-year warranty** covering manufacturer defects. This warranty ensures that the product is free from defects in materials and workmanship under normal use and service for one year from the date of purchase.

For warranty claims, technical support, or any inquiries regarding your product, please contact AB customer service.

Refer to your purchase documentation or the seller's information for contact details.

AB is committed to providing 100% satisfaction service and premium quality products. If you encounter any issues, please reach out to us freely.



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