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> AB Brazed Plate Heat Exchanger User Manual - Model AB-NO (4"x12", 40 Plates)

## AB AB-NO

# AB Brazed Plate Heat Exchanger User Manual

Model: AB-NO (4"x12", 40 Plates)

## 1. INTRODUCTION

Welcome to the user manual for your AB Brazed Plate Heat Exchanger, Model AB-NO. This document provides essential information for the safe and efficient installation, operation, and maintenance of your heat exchanger. Please read this manual thoroughly before using the product to ensure optimal performance and longevity.

The AB Brazed Plate Heat Exchanger is a compact and highly efficient unit designed for various heating and cooling applications. Constructed from high-quality 316L stainless steel and brazed with 99.9% copper, it offers durability and excellent heat transfer capabilities.

## 2. SAFETY INFORMATION

### Important Safety Instructions:

- Always ensure the unit is installed by a qualified professional in accordance with local codes and regulations.
- This heat exchanger operates under high pressure and temperature. Exercise extreme caution during installation and operation.
- Do not exceed the maximum operating pressure of 435 PSI or maximum temperature of 482°F (250°C).
- Wear appropriate personal protective equipment (PPE) during installation and maintenance.
- Ensure proper ventilation in the installation area.
- Regularly inspect the unit for any signs of damage or leakage.

## 3. PRODUCT OVERVIEW

The AB Brazed Plate Heat Exchanger is engineered for high thermal efficiency and durability. Its design facilitates effective heat transfer between two fluids without direct mixing.

### Key Features:

- **Premium Quality Construction:** Made of 316L stainless steel plates brazed with 99.9% copper, ensuring resistance to leakage and high pressure/temperature.
- **High Efficiency:** Asymmetric fish bone plate design creates strong turbulences for superior heat transfer performance, with a heat recovery rate over 90%.
- **Easy Installation:** Features smooth threads for a straightforward and flexible hookup.

- **Energy Saving:** Achieves efficient heating and cooling without electricity or oxygen consumption.

## Applications:

This heat exchanger is suitable for a wide range of applications, including:

- Domestic Water Heating
- Floor Heating
- Snow Melting Systems
- District or Zone Heating Systems
- Outdoor Wood Furnaces
- Hydraulic and Lube Oil Coolers
- Radiator Heating
- Hydronic Heating
- Solar Heating
- Wood Boiler Systems
- Homebrew Chillers
- HVAC Heating & Cooling

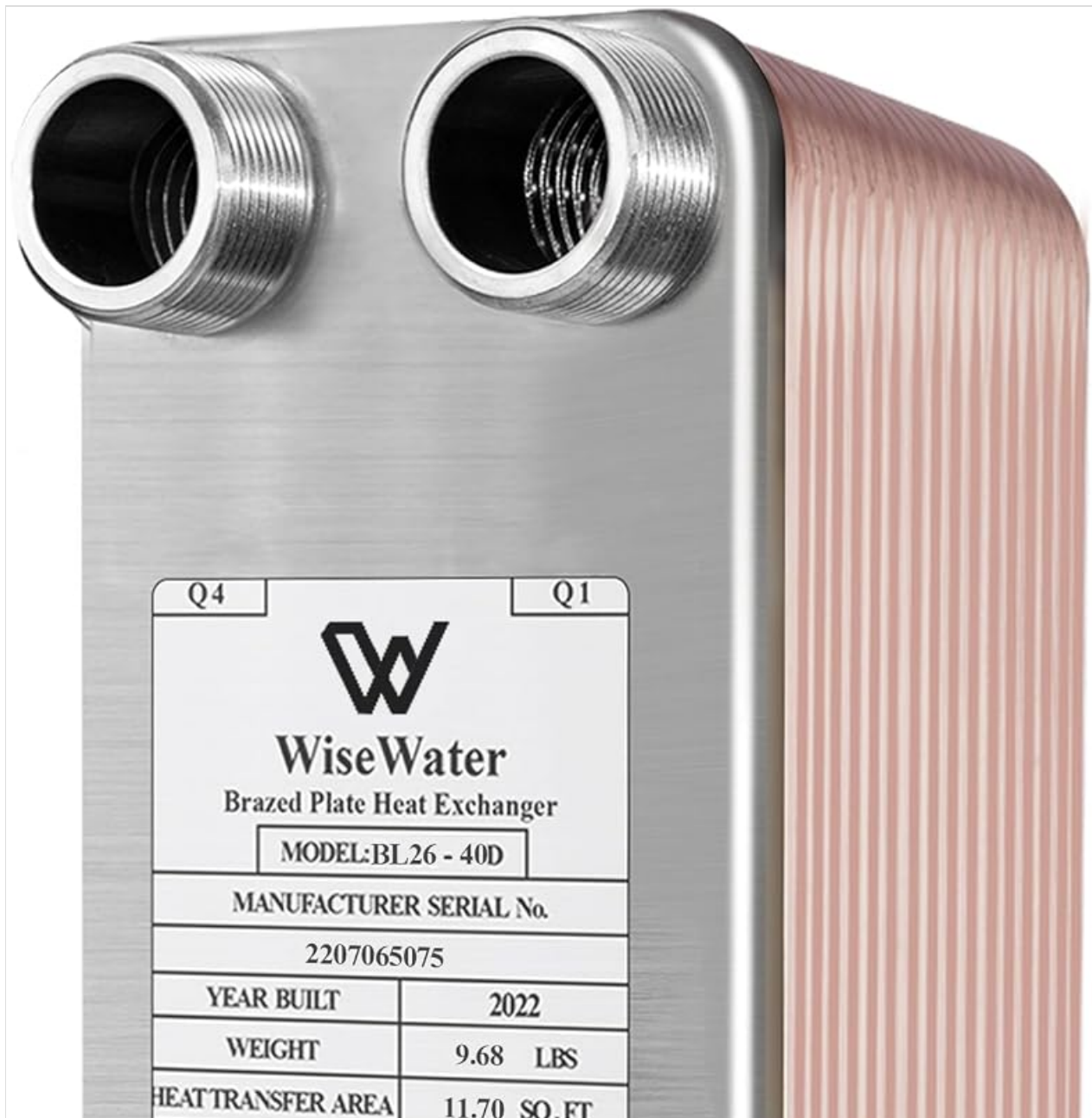




Figure 1: Front view of the AB Braze Plate Heat Exchanger, Model AB-NO.

## Multiple Applications



- Homebrew Chiller



- Water Heating



- Central Heating



- Floor Heating



- Driveway Snow Melting



- Radiator Heating



- Solar Heating



- HVAC Heating & Cooling



Figure 2: Multiple applications for the AB Brazed Plate Heat Exchanger.

### Principle of Operation:

The heat exchanger works by transferring heat between two fluids flowing in separate channels. Hot fluid enters one set of channels, and cold fluid enters another. The corrugated plates create turbulence, maximizing the surface area for heat exchange as the fluids flow counter-currently, allowing efficient heat transfer without mixing.

# Heat Exchanger Principle

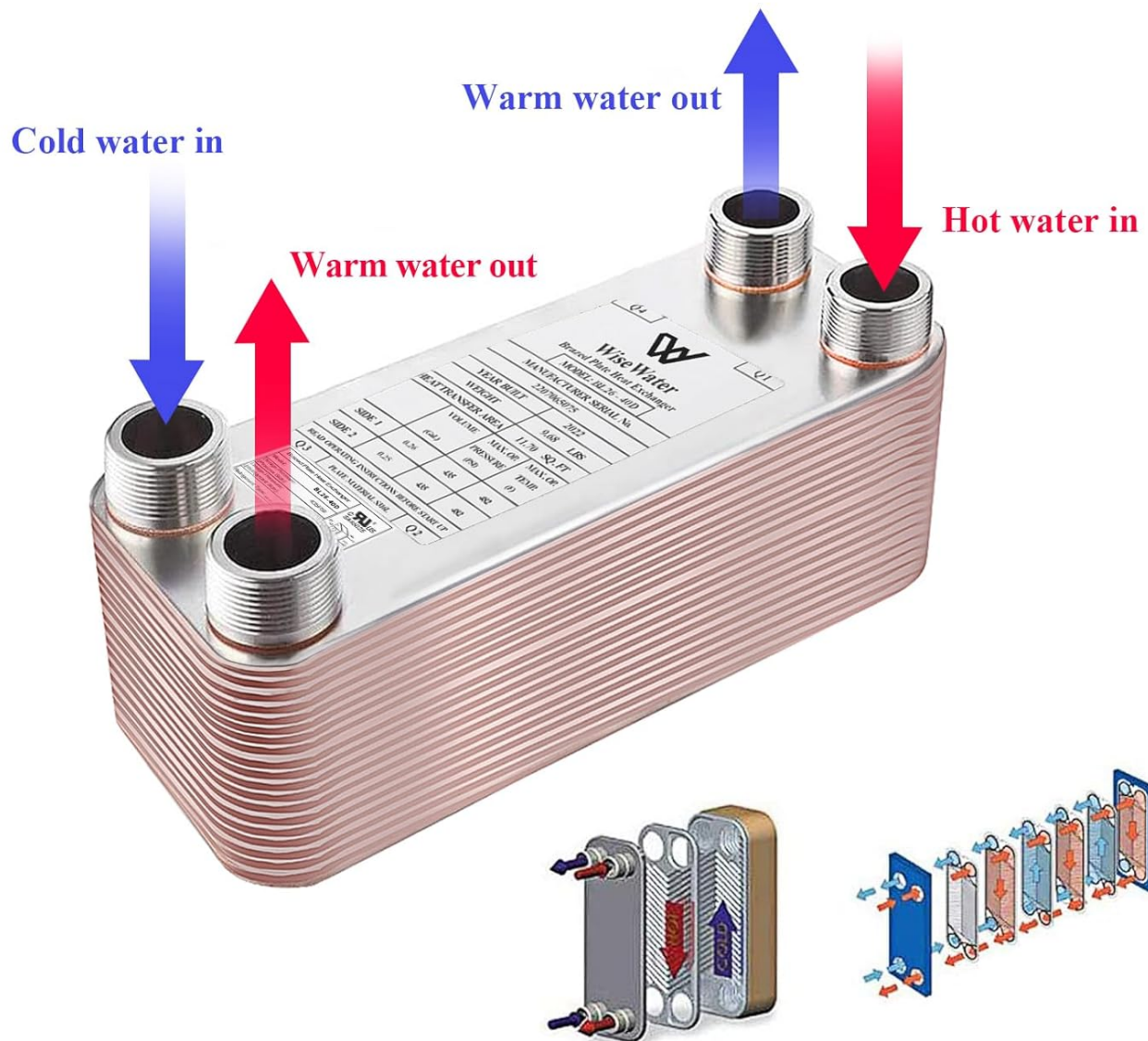


Figure 3: Illustration of the heat exchanger's operational principle.

## Product Video:

Video 1: An animated overview of the 316L Stainless Steel Plate Heat Exchanger, demonstrating its construction and heat exchange process. This video is provided by ALFA HEATING SUPPLY.

## 4. SPECIFICATIONS

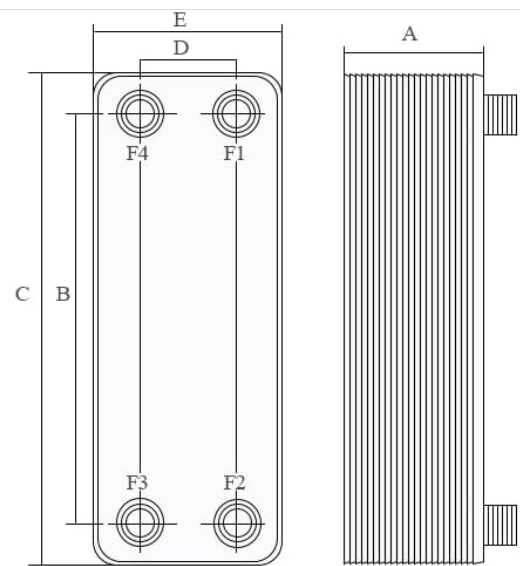
The following table outlines the key specifications for the AB Brazed Plate Heat Exchanger, Model AB-NO (BL26-40D).

| Specification      | Value            |
|--------------------|------------------|
| Brand              | AB               |
| Model Number       | AB-NO (BL26-40D) |
| Product Dimensions | 4"W x 12"H       |

| Specification              | Value                                            |
|----------------------------|--------------------------------------------------|
| Item Weight                | 11.84 pounds                                     |
| Material                   | 316L Stainless Steel, Copper Brazed              |
| Number of Plates           | 40                                               |
| Heat Output Capacity       | 350,000 - 380,000 BTU (depending on application) |
| Maximum Temperature        | 482°F (250°C)                                    |
| Maximum Operating Pressure | 435 PSI                                          |
| Efficiency                 | High Efficiency                                  |
| Mounting Type              | Wall                                             |
| Connector Size             | 1" MPT                                           |

# Plate Heat Exchager Specifications

|                  |               |
|------------------|---------------|
| Max.Flow         | 79.3GPM       |
| Connector        | 1"NPT         |
| Design Temp.     | -320.8-392°F  |
| Design Pressure  | 435PSI/652PSI |
| Testing Pressure | 652PSI/979PSI |



| BL26        | C(in) | E(in) | B(in) | D(in) | A(in) | Heating<br>Exchanging<br>Area(Ft²) | Volume<br>(USgal) |       |
|-------------|-------|-------|-------|-------|-------|------------------------------------|-------------------|-------|
|             |       |       |       |       |       |                                    | F1F2              | F3F4  |
| BL26 - 10D  | 12.24 | 4.37  | 9.84  | 1.79  | 1.29  | 2.41                               | 0.067             | 0.053 |
| BL26 - 20D  | 12.24 | 4.37  | 9.84  | 1.79  | 2.18  | 5.43                               | 0.132             | 0.119 |
| BL26 - 30D  | 12.24 | 4.37  | 9.84  | 1.79  | 3.07  | 8.44                               | 0.198             | 0.185 |
| BL26 - 40D  | 12.24 | 4.37  | 9.84  | 1.79  | 3.97  | 11.45                              | 0.264             | 0.251 |
| BL26 - 50D  | 12.24 | 4.37  | 9.84  | 1.79  | 4.86  | 14.47                              | 0.33              | 0.137 |
| BL26 - 60D  | 12.24 | 4.37  | 9.84  | 1.79  | 5.76  | 17.48                              | 0.396             | 0.383 |
| BL26 - 70D  | 12.24 | 4.37  | 9.84  | 1.79  | 6.65  | 20.49                              | 0.462             | 0.449 |
| BL26 - 80D  | 12.24 | 4.37  | 9.84  | 1.79  | 7.54  | 23.51                              | 0.528             | 0.515 |
| BL26 - 100D | 12.24 | 4.37  | 9.84  | 1.79  | 9.33  | 29.54                              | 0.66              | 0.647 |

Figure 4: Detailed specifications and dimensional diagram for various plate heat exchanger models.



Figure 5: Comparison of BL14, BL26, and BL26C series heat exchangers with dimensions.

## 5. INSTALLATION

Proper installation is crucial for the performance and safety of your heat exchanger. It is highly recommended that installation be performed by a certified HVAC professional.

### General Guidelines:

- **Mounting:** The unit is designed for wall mounting. Ensure the mounting surface is sturdy enough to support the weight of the unit when filled with fluid.
- **Connections:** The heat exchanger features 1" MPT (Male Pipe Thread) connections. Use appropriate fittings and sealants to ensure leak-free connections. The smooth threads facilitate easy hookup.
- **Flow Direction:** Refer to the product label and diagrams for correct fluid inlet and outlet ports. Typically, fluids flow counter-currently for maximum efficiency.
- **Isolation Valves:** Install isolation valves on all four ports to allow for easy maintenance and servicing without draining the entire system.
- **Pressure Relief:** Incorporate appropriate pressure relief devices in your system to prevent over-pressurization.
- **Insulation:** Insulate the heat exchanger and associated piping to minimize heat loss or gain, improving system efficiency.

# 316 Stainless Steel, Copper Brazed

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



Figure 6: Detail of the 316L Stainless Steel and Copper Brazed construction with 1" NPT threads.

## 6. OPERATION

Once properly installed, the AB Brazed Plate Heat Exchanger operates automatically as part of your heating or cooling system. Ensure all system components are functioning correctly before initiating operation.

### Operating Principles:

- The heat exchanger facilitates the transfer of thermal energy from a hotter fluid to a colder fluid.
- Maintain appropriate flow rates for both primary and secondary circuits to achieve desired heat transfer rates.
- Monitor system pressures and temperatures to ensure operation within specified limits.

### Performance Data (Hydronic Duty Tables):

The following tables provide typical performance data for various applications. These values are for reference and actual performance may vary based on specific system design and operating conditions.

# 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. | -256F                                                                   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   |                                                                                     |         |         |
| Max. Operating Temp. | 482F                                                                    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    |                                                                                     |         |         |
| Design Pressure:     | 435PSI                                                                  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  |                                                                                     |         |         |
| Test Pressure:       | 653PSI                                                                  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  |                                                                                     |         |         |
| 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                                                                             | BL14-30 | BL14-40 |
| Boiler flow GPM      | 3.5                                                                     | 5.6     | 7.5     | 8.9     | 12.4    | 13.5    | 15.9    | 19                                                                                  | 21.9    | 24.6    |
| System flow GPM      | 3.5                                                                     | 5.6     | 7.5     | 8.9     | 12.4    | 13.5    | 15.9    | 19                                                                                  | 21.9    | 24.1    |
| kBtu/hr              | 51                                                                      | 81      | 111     | 132     | 184     | 201     | 236     | 282                                                                                 | 325     | 375     |
| Min. Operating Temp. | -256F                                                                   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F                                                                               | -256F   | -256F   |
| Max. Operating Temp. | 482F                                                                    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F                                                                                | 482F    | 482F    |
| Design Pressure:     | 435PSI                                                                  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI                                                                              | 435PSI  | 435PSI  |
| Test Pressure:       | 653PSI                                                                  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI                                                                              | 653PSI  | 653PSI  |

Figure 7: Hydronic Duty Table for Domestic Hot Water and Floor Heating (BL14 series).

| Specification        | SKU | Domestic hot water heating: Boiler water 180F-150F; Pipe water 40F-140F  |         |         |         |         |         |         |         |          |
|----------------------|-----|--------------------------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|----------|
|                      |     | BL26-10                                                                  | BL26-20 | BL26-30 | BL26-40 | BL26-50 | BL26-60 | BL26-70 | BL26-80 | BL26-100 |
| Boiler flow GPM      |     | 8                                                                        | 14      | 17      | 24      | 28      | 41      | 48.3    | 53.9    | 61       |
| System flow GPM      |     | 2                                                                        | 4       | 5       | 7       | 8       | 12      | 14      | 15.7    | 17.1     |
| kBtu/hr              |     | 116                                                                      | 204     | 247     | 349     | 401     | 601     | 703     | 785     | 887      |
| Min. Operating Temp. |     | -256F                                                                    | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F    |
| Max. Operating Temp. |     | 482F                                                                     | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F     |
| Design Pressure:     |     | 435PSI                                                                   | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI   |
| Test Pressure:       |     | 653PSI                                                                   | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI   |
| Specification        | SKU | Floor Heating: Boiler water 180F-150F; System water 100F-130F            |         |         |         |         |         |         |         |          |
|                      |     | BL26-10                                                                  | BL26-20 | BL26-30 | BL26-40 | BL26-50 | BL26-60 | BL26-70 | BL26-80 | BL26-100 |
| Boiler flow GPM      |     | 5.6                                                                      | 8.9     | 22.4    | 26.2    | 29      | 33      | 36      | 40      | 44       |
| System flow GPM      |     | 5.6                                                                      | 8.9     | 22.4    | 26.2    | 29      | 33      | 36      | 40      | 44       |
| kBtu/hr              |     | 83                                                                       | 132     | 333     | 389     | 431     | 490     | 535     | 594     | 654      |
| Min. Operating Temp. |     | -256F                                                                    | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F    |
| Max. Operating Temp. |     | 482F                                                                     | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F     |
| Design Pressure:     |     | 435PSI                                                                   | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI   |
| Test Pressure:       |     | 653PSI                                                                   | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI   |
| Specification        | SKU | Snow melting heating: Boiler water 180F-150F; Water/glycol-50% 110F-140F |         |         |         |         |         |         |         |          |
|                      |     | BL26-10                                                                  | BL26-20 | BL26-30 | BL26-40 | BL26-50 | BL26-60 | BL26-70 | BL26-80 | BL26-100 |
| Boiler flow GPM      |     | 4.2                                                                      | 10      | 17      | 24      | 31      | 34      | 38      | 42      | 48       |
| System flow GPM      |     | 4.6                                                                      | 11      | 19      | 27      | 34      | 38      | 42      | 46      | 53       |
| kBtu/hr              |     | 61                                                                       | 146     | 251     | 357     | 449     | 502     | 555     | 608     | 701      |
| Min. Operating Temp. |     | -256F                                                                    | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F   | -256F    |
| Max. Operating Temp. |     | 482F                                                                     | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F    | 482F     |
| Design Pressure:     |     | 435PSI                                                                   | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI  | 435PSI   |
| Test Pressure:       |     | 653PSI                                                                   | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI  | 653PSI   |

Figure 8: Hydronic Duty Table for Domestic Hot Water, Floor Heating, and Snow Melting (BL26 series).

| Specification \ SKU  | Domestic hot water heating: Boiler water 180F-150F; Pipe water 40F-140F |          |          |          |          |          |          |          |          |   |
|----------------------|-------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|---|
|                      | 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. | -256F                                                                   | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    | — |
| Max. Operating Temp. | 482F                                                                    | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     | — |
| Design Pressure:     | 435PSI                                                                  | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | — |
| Test Pressure:       | 653PSI                                                                  | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | — |

| Specification \ SKU  | Floor Heating: Boiler water 180F-150F; System water 100F-130F |          |          |          |          |          |          |          |          |           |
|----------------------|---------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|                      | 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      | 389      | 490      | 535      | 594      | 639      | 817      | 1025      |
| Min. Operating Temp. | -256F                                                         | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    | -256F     |
| Max. Operating Temp. | 482F                                                          | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     | 482F      |
| Design Pressure:     | 435PSI                                                        | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI    |
| Test Pressure:       | 653PSI                                                        | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI    |

| Specification \ SKU  | Snow melting heating: Boiler water 180F-150F; Water/glycol-50% 110F-140F |          |          |          |          |          |          |          |
|----------------------|--------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|
|                      | 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              | 145                                                                      | 159      | 251      | 357      | 449      | 502      | 555      | 701      |
| Min. Operating Temp. | -256F                                                                    | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    | -256F    |
| Max. Operating Temp. | 482F                                                                     | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     | 482F     |
| Design Pressure:     | 435PSI                                                                   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   | 435PSI   |
| Test Pressure:       | 653PSI                                                                   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   | 653PSI   |



Figure 9: Hydronic Duty Table for Domestic Hot Water, Floor Heating, and Snow Melting (BL26C series).

7. MAINTENANCE

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

Recommended Maintenance:

- **Periodic Inspection:** Visually inspect the unit and connections for any signs of corrosion, leaks, or damage. Address any issues promptly.
- **System Fluid Quality:** Ensure the quality of the fluids circulating through the heat exchanger. Poor water quality can lead to scaling or fouling, reducing efficiency. Consider using appropriate water treatment if necessary.
- **Cleaning:** If a significant drop in performance is observed, the heat exchanger may require cleaning to remove scale or deposits. Consult a professional for chemical cleaning procedures, as improper cleaning can damage the unit.
- **Pressure Testing:** Periodically check system pressure to ensure it remains within the recommended operating range.

8. TROUBLESHOOTING

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

| Problem                          | Possible Cause                                                                    | Solution                                                                                                    |
|----------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Reduced Heat Transfer Efficiency | Fouling or scaling inside the plates; insufficient flow rates; air in the system. | Check fluid quality and consider cleaning; verify pump operation and flow rates; bleed air from the system. |

| Problem                | Possible Cause                                                | Solution                                                                                              |
|------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Leakage at Connections | Improperly tightened fittings; damaged seals or threads.      | Tighten connections; inspect and replace seals or fittings as needed. Use appropriate thread sealant. |
| Unusual Noises         | Air in the system; cavitation due to low pressure; vibration. | Bleed air; check system pressure and pump performance; ensure proper mounting to reduce vibration.    |

## 9. WARRANTY AND SUPPORT

Your AB Brazed Plate Heat Exchanger comes with a **1-year warranty** covering manufacturer defects. AB is committed to providing 100% satisfaction service and premium quality products.

If you encounter any problems with your product or require technical assistance, please contact AB customer support. For more information about AB products, visit the official [AB Store on Amazon](#).

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