

# WATER COOLED BRAZED PLATE/BPS SERIES

water cooled  
BRAZED PLATE

LOW COST  
HIGH PERFORMANCE  
COMPACT DESIGN



- Corrosion Resistant Type 304 Stainless Steel Plates
- Mounting Studs Standard
- SAE Oil Connections, NPT Water Connections
- Optional Mounting Bracket
- Optional Nickel Brazed Construction

## MATERIALS

**Plate Material** - 304 Stainless Steel

**Braze Material** - Copper, Standard  
Nickel, Optional

**Stud Bolts** - 304 Stainless Steel

**Foot Mounting Brackets** - Carbon Steel

## RATINGS

**Maximum working temperature** - 450°F

**Maximum working pressure** - 450 psi

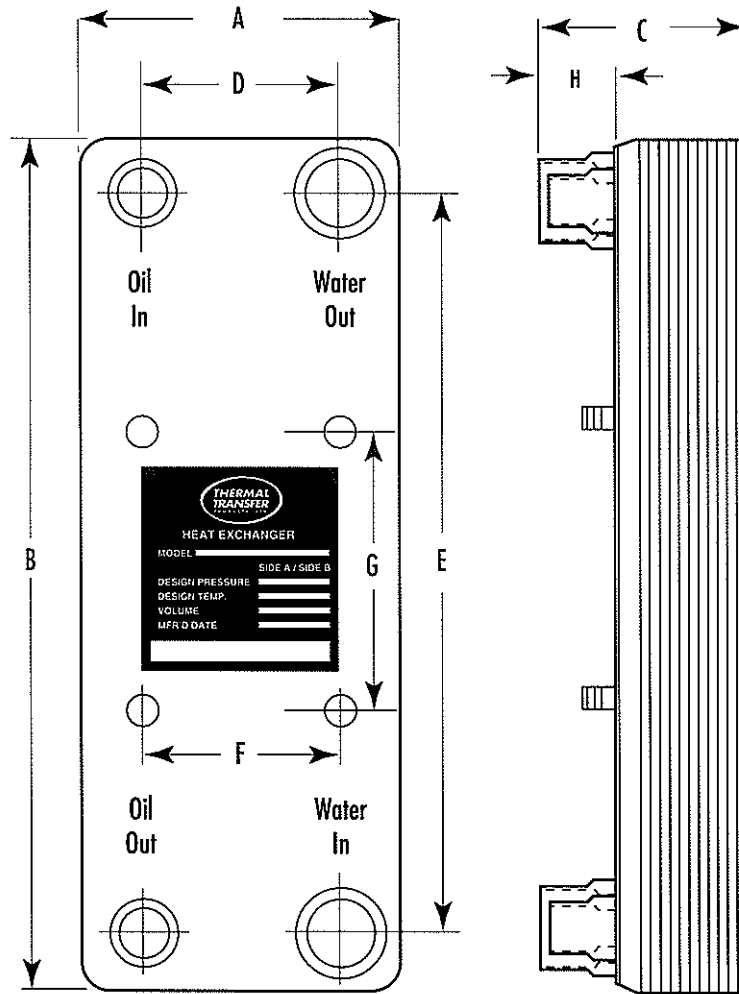
**Test pressure** - 600 psi

**ADDITIONAL MODELS AVAILABLE  
CONSULT FACTORY**

## HOW TO ORDER

| SERIES                                  | PLATES               | SIZE                 | OPTIONS                    |
|---|----------------------|----------------------|----------------------------|
| <input type="text"/>                    | <input type="text"/> | <input type="text"/> | <input type="text"/>       |
| BPS = SAE Oil connections,<br>NPT Water | Number of Plates     | 12x5<br>20x10        | FB = Foot Mounting Bracket |

# DIMENSIONS



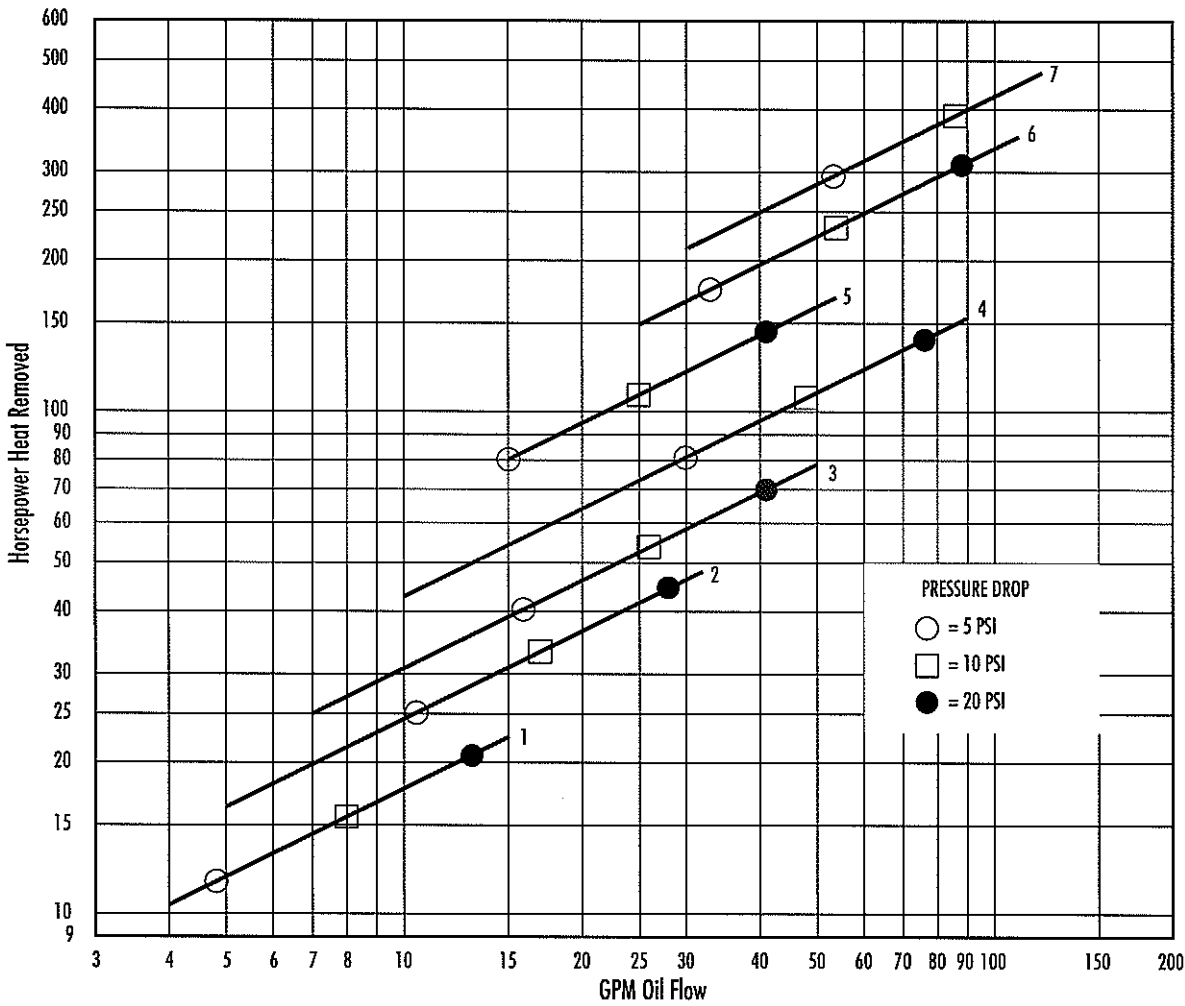
| Model        | A   | B    | C    | D   | E    | F   | G   | H    | Oil SAE | Water NPT | Net Wt. Lbs. |
|--------------|-----|------|------|-----|------|-----|-----|------|---------|-----------|--------------|
| BPS-12-12x5  | 4.9 | 12.2 | 2.61 | 2.7 | 9.9  | 2.5 | 3.5 | 1.12 | #12     | 3/4       | 8            |
| BPS-24-12x5  |     |      | 3.75 |     |      |     |     |      |         |           | 12           |
| BPS-36-12x5  |     |      | 5.00 |     |      |     |     | 16   |         |           |              |
| BPS-70-12x5  |     |      | 8.19 |     |      |     |     | 27   |         |           |              |
| BPS-24-20x10 | 9.8 | 20.3 | 3.99 | 6.5 | 17.0 | 4.0 | 5.5 | 1.38 | #24     | 1-1/2     | 39           |
| BPS-50-20x10 |     |      | 6.44 |     |      |     |     |      |         |           | 68           |
| BPS-80-20x10 |     |      | 9.25 |     |      |     |     |      |         |           | 100          |

Dimensions are in inches. We reserve the right to make reasonable design changes without notice.

SAE Connection Thread Forms: #12 SAE = 1-1/16 - 12UN-2B #20 SAE = 1-5/8 - 12UN-2B #24 SAE = 1-7/8 - 12UN-2B

NPT Connections are internal threads (female).

# PERFORMANCE CURVES



- MODEL**
1. BPS-12-12X5
  2. BPS-24-12X5
  3. BPS-36-12X5
  4. BPS-70-12X5
  5. BPS-24-20X10
  6. BPS-50-20X10
  7. BPS-80-20X10

## APPLICATION INFORMATION

Performance Curves are based on 100SSU oil at 40°F approach temperature (125°F oil leaving cooler, 85°F water entering cooler),

2:1 oil: water ratio (1 GPM water flow for each 2 GPM oil flow).

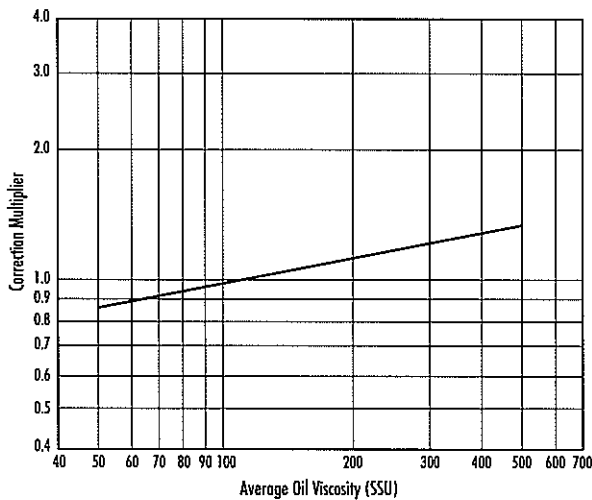
**Step 1. Determine Curve Horsepower Heat to be Removed.**

$$\text{Horsepower heat load} \times \frac{40}{\text{Oil leaving cooler } ^\circ\text{F} - \text{Water entering cooler } ^\circ\text{F}} \times \text{Performance Correction Multiplier} = \text{Curve Horsepower Heat to be Removed}$$

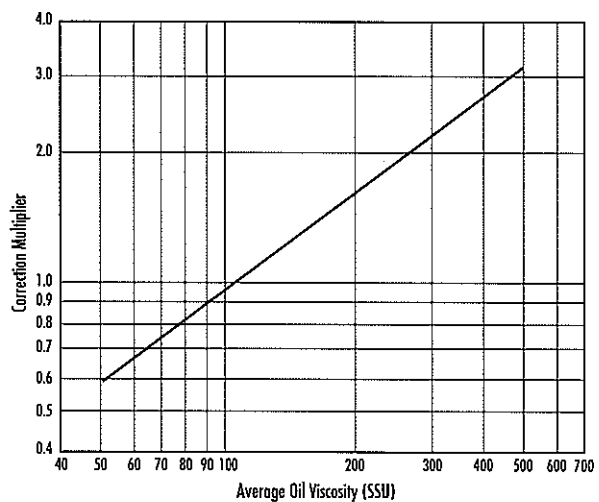
**Step 2. Determine Actual Oil Pressure Drop.**

$$\text{Pressure drop shown on curve} \times \text{Pressure drop correction multiplier} = \text{Actual pressure drop}$$

### Performance Correction

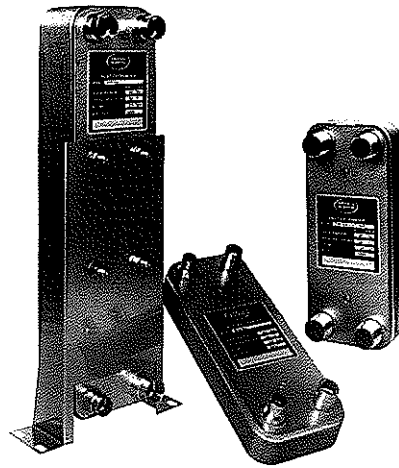


### Pressure Drop Correction



**WATER COOLED BRAZED PLATE/BP SERIES**

**LOW COST**  
**HIGH PERFORMANCE**  
**COMPACT DESIGN**



- Oil Cooling
- Solvent Condensing
- Water Cooling/Heating
- Refrigeration Service
- Gas to Gas
- Gas to Liquid

**MATERIALS**

**Plate Material** - 316 Stainless Steel  
**Braze Material** - Copper, Standard Nickel, Optional

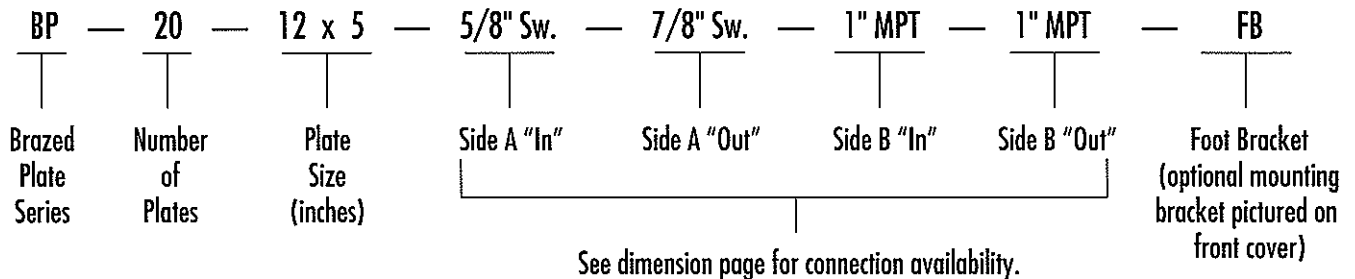
**ADDITIONAL MODELS AVAILABLE  
CONSULT FACTORY**

**RATINGS**

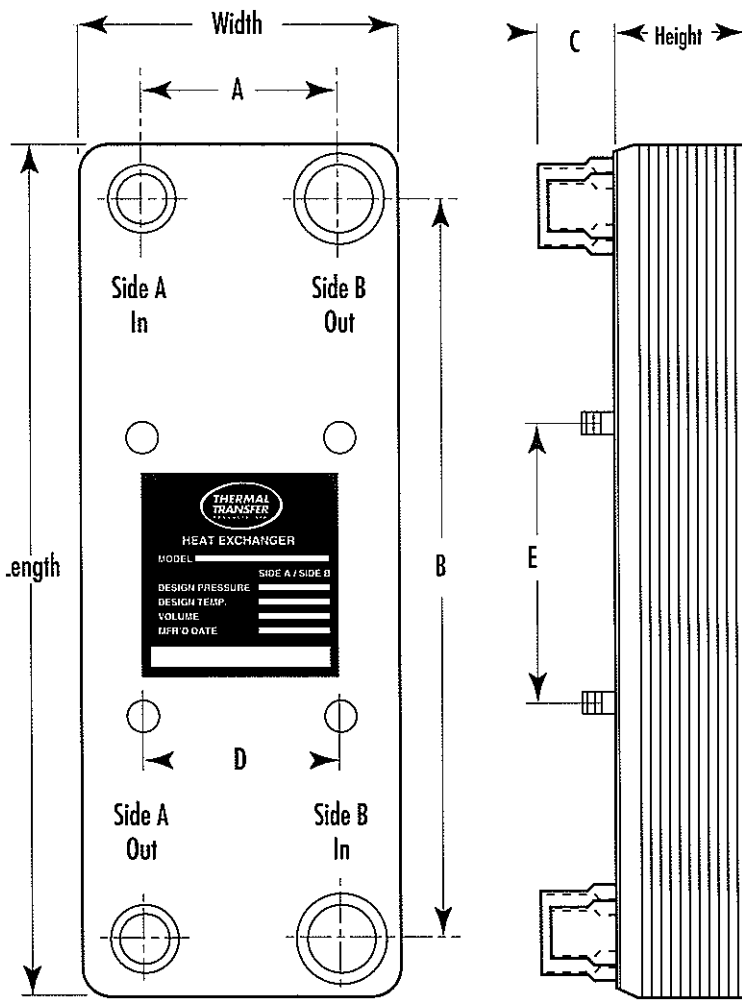
**Maximum working temperature** - 350°F  
**Maximum working pressure** - 300 psi  
**Test pressure** - 450 psi

**MODEL CODING**

**Example:**



# DIMENSIONS & WEIGHTS



| Connection Type                   | C Dimension |
|-----------------------------------|-------------|
| 1/2, 5/8, 7/8 ID Sweat & 3/4" MPT | 1.125"      |
| 1-1/8 ID Sweat & 1" MPT           | 1.250"      |
| 1-3/8 ID Sweat & 1-1/4" MPT       | 1.375"      |
| 1-5/8 ID Sweat & 1-1/2" MPT       | 1.500"      |
| 2-1/8 ID Sweat & 2" MPT           | 1.750"      |
| 2-5/8 ID Sweat & 2-1/2" MPT       | 2.000"      |

| Model   | D    | E    |
|---------|------|------|
| 12 x 5  | 2.5" | 3.5" |
| 20 x 5  | 2.5" | 5.5" |
| 20 x 10 | 4.0" | 5.5" |

|                                     |                      |
|-------------------------------------|----------------------|
| <b>Stud Bolts for 12 x 5 Models</b> | 3/8-24 x 7/8" long   |
| <b>Stud Bolts for 20 x 5 Models</b> |                      |
| <b>Stud Bolts for 20 x 10 Model</b> | 1/2-20 x 1-1/2" long |

| Model      | Dimensions (in.) |     |                         |     |      | Connections   | Approx. Wt. (lbs)      |
|------------|------------------|-----|-------------------------|-----|------|---|------------------------|
|            | L                | W   | H                       | A   | B    |   |                        |
| BP 12 x 5  | 12.2             | 4.9 | .094 x<br>#plates + .36 | 2.7 | 9.9  | Sweat: 5/8", 7/8", 1-1/8", 1-3/8" ID<br>Threaded: 3/4", 1", 1-1/4" MPT                      | .34 x<br>#plates + 3.0 |
| BP 20 x 5  | 20.3             | 5.0 | .094 x<br>#plates + .36 | 2.8 | 18.1 | Sweat: 5/8", 7/8", 1-1/8", 1-3/8" ID<br>Threaded: 1", 1-1/4" MPT                            | .52 x<br>#plates + 4.2 |
| BP 20 x 10 | 20.3             | 9.8 | .094 x<br>#plates + .36 | 6.5 | 17.0 | Sweat: 7/8", 1-1/8", 1-3/8"<br>1-5/8" 2-1/8", 2-5/8" ID<br>Threaded: 1-1/2", 2", 2-1/2" MPT | .80 x<br>#plates + 9.8 |

Notes: 1. When ordering, add description of all four connections (sweat or Male Pipe Thread MPT and size).

2. Some applications may require that the **In** and **Out** connections be reversed. Consult factory for recommendations.

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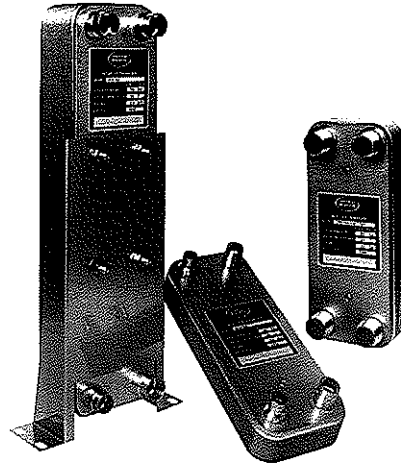
## **WATER COOLED BRAZED PLATE/BPCH SERIES**

**LOWER REFRIGERANT CHARGE**

**LOW COST**

**HIGH PERFORMANCE**

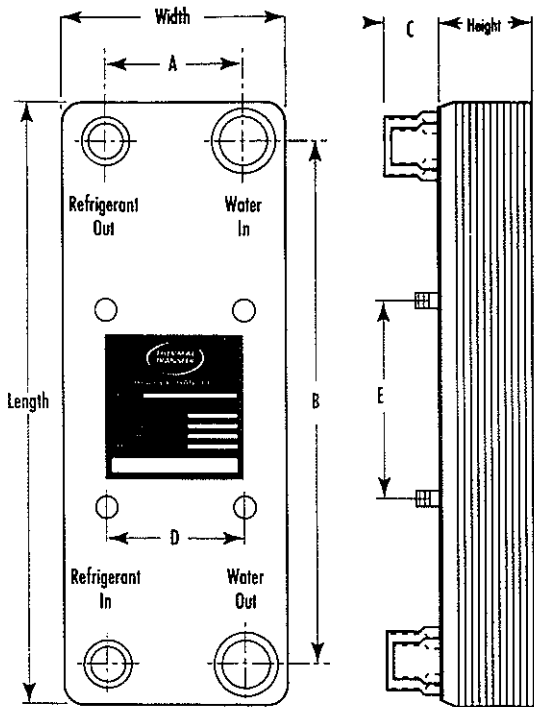
**COMPACT DESIGN**



- Specifically Designed for DX Water Chilling Applications from 1 to 40 Tons
- Unique DX Distribution Tube Assures Proper Gas Distribution and Peak Performance
- Maximum Pressure 450 PSI, Maximum Temperature 450°F
- 100% Helium Leak Tested at 600 PSI
- Type 304 Stainless Steel Plates
- Copper Brazed (Optional Nickel Brazing Compound)
- Optional Foot Mounting Bracket

# BPCH SERIES LIQUID CHILLERS

water cooled  
**BRAZED PLATE**



|                    |   |
|--------------------|---|
| Stud Bolts 12 x 5  | Optional 3/8 - 24 x 7/8"L   |
| Stud Bolts 20 x 5  | Optional 2 - 5 Tons<br>Standard 7.5 - 15 Tons<br>3/8 - 24 x 7/8"L |
| Stud Bolts 20 x 10 | Standard 1/2 - 20 x 7/8"L   |

| Model   | D    | E    |
|---------|------|------|
| 12 x 5  | 2.5" | 3.5" |
| 20 x 5  | 2.5" | 5.5" |
| 20 x 10 | 4.0" | 5.5" |

| Connection Type                   | C Dimension |
|-----------------------------------|-------------|
| 1/2, 5/8, 7/8 ID Sweat & 3/4" NPT | 1.125"      |
| 1-1/8 ID Sweat & 1" NPT           | 1.25"       |
| 1-3/8 ID Sweat & 1-1/4" NPT       | 1.375"      |
| 1-5/8 ID Sweat & 1-1/2" NPT       | 1.50"       |
| 2-1/8 ID Sweat & 2" NPT           | 1.75"       |
| 2-5/8 ID Sweat & 2-1/2" NPT       | 2.0"        |

| Waterside Pressure Drop  |           |             |           |
|--------------------------|-----------|-------------|-----------|
| Model                    | 2 GPM/ton | 2.4 GPM/ton | 3 GPM/ton |
| BPCH 1A thru BPCH 5A     | .8 PSI    | 1.6 PSI     | 1.9 PSI   |
| BPCH 2 thru BPCH 5       | 2.7 PSI   | 3.8 PSI     | 5.6 PSI   |
| BPCH 7-1/2 thru BPCH 15B | 2.7 PSI   | 3.9 PSI     | 5.7 PSI   |
| BPCH 10 thru BPCH 40     | 2.6 PSI   | 3.8 PSI     | 5.9 PSI   |

| 12" x 5" Models  |      |       |        |        |     |      |                 |                 |        |            |             |            |          |            |
|------------------|------|-------|--------|--------|-----|------|-----------------|-----------------|--------|------------|-------------|------------|----------|------------|
| Model            | Tons | Width | Length | Height | A   | B    | Refrig. Out     | Refrig. In      | Water  | Wt. (lbs.) |             |            |          |            |
| BPCH 1A          | 1    | 4.9   | 12.2   | 1.3    | 2.7 | 9.9  | 5/8 ID - 7/8 OD | 5/8 ID - 7/8 OD | 7/8 ID | 5          |             |            |          |            |
| BPCH 1-1/2A      | 1.5  |       |        | 1.5    |     |      |                 |                 |        | 6          |             |            |          |            |
| BPCH 2A          | 2    |       |        | 1.9    |     |      |                 |                 |        | 8          |             |            |          |            |
| BPCH 3A          | 3    |       |        | 2.6    |     |      |                 |                 |        | 10         |             |            |          |            |
| BPCH 4A          | 4    |       |        | 3.2    |     |      |                 |                 |        | 12         |             |            |          |            |
| BPCH 5A          | 5    | 4.2   | 14     |        |     |      |                 |                 |        |            |             |            |          |            |
| 20" x 5" Models  |      |       |        |        |     |      |                 |                 |        |            |             |            |          |            |
| Model            | Tons | Width | Length | Height | A   | B    | Refrig. Out     | Refrig. In      | Water  | Wt. (lbs.) |             |            |          |            |
| BPCH 1-1/2       | 2    | 5.0   | 20.3   | 1.1    | 2.8 | 18.1 | 5/8 ID - 7/8 OD | 5/8 ID - 7/8 OD | 7/8 ID | 8          |             |            |          |            |
| BPCH 2           | 2    |       |        | 1.3    |     |      |                 |                 |        | 9          |             |            |          |            |
| BPCH 2-1/2       | 2.5  |       |        | 1.5    |     |      |                 |                 |        | 10         |             |            |          |            |
| BPCH 3           | 3    |       |        | 1.7    |     |      |                 |                 |        | 12         |             |            |          |            |
| BPCH 3-1/2       | 3.5  |       |        | 1.9    |     |      |                 |                 |        | 13         |             |            |          |            |
| BPCH 4           | 4    |       |        | 2.3    |     |      | 14              |                 |        |            |             |            |          |            |
| BPCH 5           | 5    |       |        | 2.6    |     |      | 16              |                 |        |            |             |            |          |            |
| BPCH 7-1/2       | 7.5  |       |        | 3.8    |     |      | 22              |                 |        |            |             |            |          |            |
| BPCH 10B         | 10   |       |        | 5.1    |     |      | 28              |                 |        |            |             |            |          |            |
| BPCH 12B         | 12.5 |       |        | 6.0    |     |      | 34              |                 |        |            |             |            |          |            |
| BPCH 15B         | 15   |       |        | 7.0    |     |      | 40              |                 |        |            |             |            |          |            |
| 20" x 10" Models |      |       |        |        |     |      |                 |                 |        |            |             |            |          |            |
| Model            | Tons |       |        | Width  |     |      | Length          | Height          | A      | B          | Refrig. Out | Refrig. In | Water    | Wt. (lbs.) |
| BPCH 10          | 10   |       |        | 9.8    |     |      | 20.3            | 2.6             | 6.5    | 17.0       | 1-3/8 ID    | 7/8 ID     | 1-5/8 ID | 34         |
| BPCH 12          | 12.5 |       |        |        |     |      |                 | 3.2             |        |            |             | 40         |          |            |
| BPCH 15          | 15   | 3.7   | 45     |        |     |      |                 |                 |        |            |             |            |          |            |
| BPCH 20          | 20   | 5.1   | 57     |        |     |      |                 |                 |        |            |             |            |          |            |
| BPCH 25          | 25   | 6.0   | 68     |        |     |      |                 |                 |        |            |             |            |          |            |
| BPCH 30          | 30   | 7.0   | 81     |        |     |      |                 |                 |        |            |             |            |          |            |
| BPCH 35          | 35   | 8.8   | 92     |        |     |      |                 |                 |        |            |             |            |          |            |
| BPCH 40          | 40   | 9.8   | 104    |        |     |      |                 |                 |        |            |             |            |          |            |

NOTES: 1. Nominal tons - 12,000 BTUH per ton, 54°F EWT, 44° LWT, 35°F Evap. Temp., 10°F Superheat, 2.4 gpm per ton, R-22.  
2. For Glycol, special fluids or design conditions other than listed above, please contact the factory for special computer selection.  
\* Add .75' to height of refrigerant in connection.

For more information or to purchase these products, please contact:

**HYDROTHRIFT CORPORATION**  
**(800) 772-0493**

[www.hydrothrift.com](http://www.hydrothrift.com)  
[sales@hydrothrift.com](mailto:sales@hydrothrift.com)