Brazed Plate Heat Exchangers TTP's Series

c UL US LISTED

PRODUCT INFORMATION- APPLICATIONS INSTALLATION - MAINTENANCE GUIDE

⚠ WARNING Before proceeding with installation and operation, read entire manual carefully. Failure to do so can cause injury or property damage.

TTP heat exchangers are not compatible with ammonia (NH_3)

NOTICE When receiving TTP's, any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Table of Contents

Following terms are used throughout this manual to bring attention to the presence of potential hazards or to important information concerning the product.

⚠ DANGER

Indicates presence of a hazardous situation, which, if ignored, will result in death, serious injury or substantial property damage.

⚠ WARNING

Indicates a potentially hazardous situation which, if ignored, can result in death, serious injury or substantial property damage.

⚠ CAUTION

Indicates a potentially hazardous situation which, if ignored, may result in minor injury or property damage.

NOTICE

Indicates special instructions on installation, operation, or maintenance, which are important to equipment but not related to personal injury hazards.

NOTICE

Triangle Tube reserves the right to modify the technical specifications and components of its products without prior notice.

HIGH EFFICIENCY

The design of the plates creates two separate channels for a true counter current flow movement. This complex channel system results in high turbulence and high heat transfer.

MATERIALS

The standard TTP Braze Plate Heat Exchanger has plates and connections made of AISI 316L stainless steel. The brazing alloy is 99.9% copper. An optional TTP Braze Plate Heat Exchanger with marine grade stainless plates and nickel brazing material is available, see Notice on page 3. The use of these materials provides a high degree of corrosion resistance and suitability with a wide variety of fluids.

SELF CLEANING

TTP Braze Plate Heat Exchangers operate with high turbulence flow, even at low flow rates. This high turbulence keeps small particles in suspension minimizing fouling and scaling.

APPLICATIONS

TTP Braze Plate Heat Exchangers are suitable for a variety of single-phase fluid-to-fluid and two-phase refrigerant to fluid applications.

- Fluid-to-Fluid
  - Domestic Hot Water production
  - Floor Heating
  - Snow Melting
  - Swimming Pool and Spas - See Notice on page 3
  - Industrial Liquid Cooling
  - Engine / Hydraulic Oil cooling
- Two-Phase
  - Water cooled condensers
  - Liquid Chillers
  - Economizers
  - De-superheaters
  - Sub-coolers

PRODUCT APPROVALS

- Triangle Tube's TTP Braze Plate Heat Exchangers are UL approved.
- ASME is available as an option.

CODE COMPLIANCE & RESTRICTIONS

- All piping and installations must conform with the instructions listed in this manual and where applicable:
  - Local, state, provincial and national codes.
- Where recommendations in this manual differ from local, state or national codes, the local, state or national codes take precedence.

The heat exchanger is a single wall exchanger and complies with National Standard Plumbing Code provided:

- Boiler / primary water (including additives) is practically non-toxic, having a toxicity rating or Class of 1 as listed in Clinical Toxicology of Commercial Products, and
- Boiler / primary water pressure is limited to maximum 30 psig by approved relief valve.

Single wall heat exchangers are permitted under Uniform Plumbing Code - Paragraphs L3.2 and L3.3 if they satisfy all of the following requirements:

1. The heat transfer medium is potable water or contains only substances, which are recognized as safe by the U.S. Food and Drug Administration.
2. The pressure of the heat transfer medium is maintained less than the normal minimum operating pressure of the potable water system.
3. The equipment is permanently labeled to indicate that only additives recognized as safe by the FDA shall be used in the heat transfer medium.

Other heat exchanger designs may be permitted where approved by the administrative authority.

OPERATING RESTRICTION

Max. Operating Pressure ("E" model): 150 psig

Max. Operating Pressure (Double Wall): 362 psig

Max. Operating Pressure: 450 psig

Max. Operating Temperature: 350°F

Min. Operating Temperature: (-)320°F

Max. Steam Pressure: 15 psi

WATER / FLUID QUALITY RESTRICTIONS

- pH limit should be maintained between 6 and 8 for copper brazed exchangers
- pH limit (minimum) of 2 for nickel braze exchangers
- Chloride level of less than 80 mg/l
- Sulfuric Acid or other types of corrosive acids
- Highly chlorinated water such as pool water is not acceptable and will cause premature failure.

NOTICE

For pool and spa application with chlorine levels up to 3000 ppm it is recommend to use the nickel brazed heat exchangers.

Salt water or electronic chlorinating pools and spas is not acceptable and will cause premature failure.

NOTICE

For salt water or electronic chlorinating pool and spa applications contact Triangle Tube Technical Services for assistance in sizing a titanium plate heat exchanger.

REFRIGERANT RESTRICTIONS

The copper brazed heat exchangers are not compatible with ammonia (NH_3) systems. The heat exchangers with nickel brazing are suitable for this type of application.

DOUBLE WALL BRAZE PLATE HEAT EXCHANGER

The TTP-5 Series DW is a true double wall heat exchanger that provides extra protection against leakage while providing leak detection. This system consists of two stainless steel plates instead of one. In case of internal damage to the plates, the chance of fluid cross-contamination is reduced.

NOTICE

For sizing applications using a double wall heat exchanger it is recommended to contact Triangle Tube's Engineering Department.

GENERAL INSTALLATION REQUIREMENTS

- Ensure all plumbing / piping meets or exceeds all local, state or national codes.
- Use isolation valves to isolate system components
- Install unions for easy removal of the braze plate heat exchanger. It is recommended to use dielectric unions or couplings to protect fittings from corrosion when connecting dissimilar materials such as copper and galvanized iron pipe.
- Provision should be made to allow for thermal expansion or vibration.
- It is recommended to provide provisions for back flushing and / or chemical in-place cleaning.
- A water strainer is recommended on the water inlet circuit to protect the heat exchanger from restricted flow rate and/or blockage. The strainer should have a 16-20 mesh as minimum, a 20-40 mesh is recommended.
- Flush all piping prior to connecting to the heat exchanger.
- Provisions should be provided in the piping to allow air elimination and drainage of the system.

NOTICE

When boiler water is utilized as the hot water circuit, a strainer may not be required on the inlet side of the heat exchanger provided a water strainer is incorporated as an integral component in the boiler system.

⚠ WARNING

To prevent the over-pressurization of the heat exchanger, a safety relief valve should be installed in the piping in the vicinity of the heat exchanger. The safety relief valve, if required, is to be provided by the installer.

MOUNTING GUIDELINES

- The heat exchanger should be mounted in a manner that allows sufficient space to perform maintenance.
- It is recommended that the heat exchanger be mounted in a vertical position with the colored label on the left side of the installation. When space and piping restrictions require another position, the following guidelines should be applied:

Liquid-to-Liquid Single Phase Applications

- The heat exchanger can be mounted in any position that does not create the possibility of trapping air or other gases in the heat exchanger.
- If the heat exchanger must be mounted with the connections on the side, orient the heat exchanger so that the connections for the fluid likely to have entrapped air is at the top.

Two-Phase Applications

- The heat exchanger must be mounted in a vertical position.

NOTICE

For steam applications the heat exchanger must be mounted in a vertical position only.

⚠ WARNING

The heat exchanger may have sharp edges. Exercise caution when handling. Wear gloves.

- It is recommended that the heat exchanger be supported by a bracket or stand with a bottom support.

NOTICE

The heat exchanger should not be supported solely by the piping or connections.

- Insure that severe vibrations or pulsation cannot be transmitted to the heat exchanger. Install vibration absorbers in the piping and use vibration absorbing material between the heat exchanger and the equipment as needed.

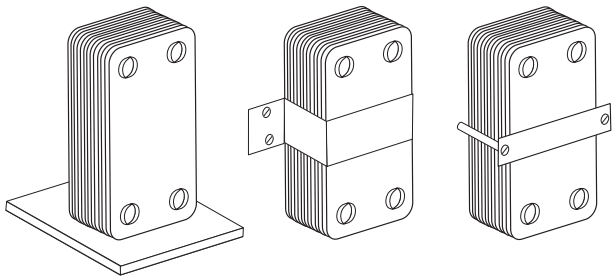

Fig.1: Recommended Methods of Mounting

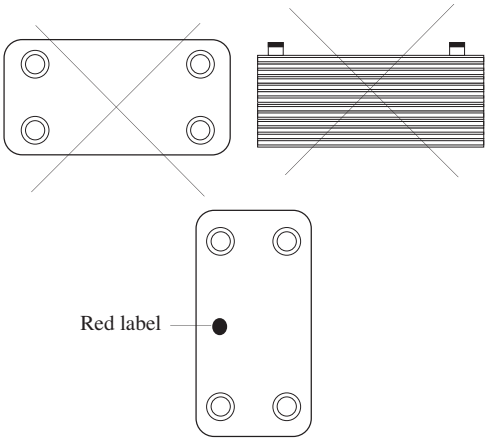

Fig.2: Recommended Mounting Position

GENERAL PIPING ARRANGEMENTS - MULTIPLE HEAT EXCHANGERS

Multiple Heat Exchangers in Series

- Able to extend the thermal length (capacity) of a heat exchanger.
- Generally a high pressure drop occurs through the heat exchangers

Multiple Heat Exchangers in Parallel

- Able to handle large flow rates with smaller sized heat exchangers.
- Can maintain lower pressure drops through the heat exchangers with larger flow rates.

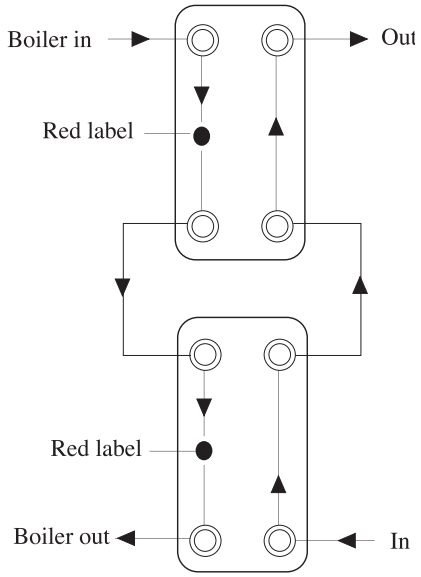

Fig.3: Multiple Series Arrangement

SOLDERING AND WELDING CONNECTIONS

Soldering Procedures:

Recommended solder material: 30 - 55% silver alloy

Recommended flux material: Black flux for silver soldering

1. Degrease and clean the soldering surfaces on the piping and the heat exchanger connections.
2. Apply the flux to both surfaces.
3. For refrigerant applications, purge using dry nitrogen gas on the refrigerant side to prevent internal oxidation.
4. Heat the soldering area to approximately 1200°F (650°C). Use a wet cloth to protect the heat-exchanger while brazing.

⚠ WARNING

Do not heat the soldering area higher than 1200°F. Damage to the heat exchanger brazing material could occur.

5. Keep the piping in a fixed position and apply the solder.

⚠ WARNING

Do not braze the heat exchanger in a horizontal or flat position. Solder material may fall into the heat exchanger or piping connection, creating a blockage within the distribution channels . Direct the flame away from the heat exchanger

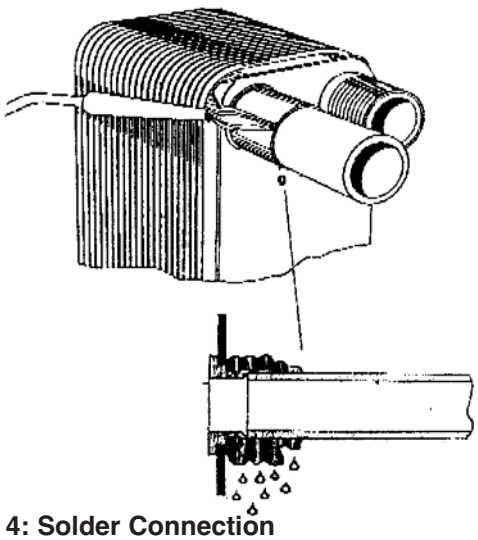

Fig. 4: Solder Connection

WELDING PROCEDURES

1. Prepare the edge of the connecting pipe for welding with a 30° angle chamfer.
2. Place the connecting pipe into the heat exchanger connection.
3. Use TIG or MIG/MAG welding method filling the groove form by the two edges.
4. For refrigerant applications, purge using dry nitrogen gas on the refrigerant side to prevent internal oxidation.
5. Heat the welding area to approximately 1200°F (650°C). Use a wet cloth to protect the heat-exchanger while welding.

⚠ WARNING

When using electrical welding circuits, connect the ground terminal to the joining tube, do not connect to the back of the heat exchanger. Damage to the internal channels and/or brazing material of the heat exchanger could occur.

⚠ WARNING

Do not heat the welding area higher than 1200°F. Damage to the heat exchanger brazing material could occur.

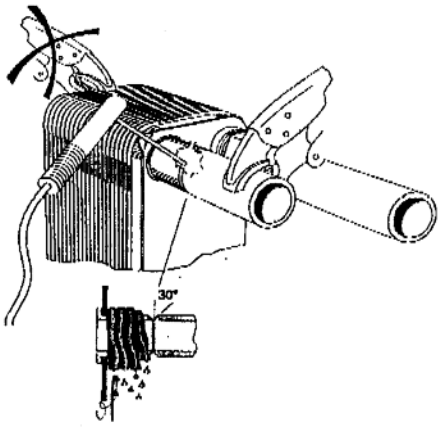

Fig. 5: Welded Connection

THREADED CONNECTIONS

General Guidelines

- Use Teflon or Mylar tape or other sealant on the male threaded part of the heat exchanger connection to prevent leakage.
- Use a back-up-wrench method when installing threaded connections. DO NOT over torque the connection. Over tightening connection will damage the heat exchanger.

GENERAL GUIDELINES FOR CLEANING

- A 5% solution of Phosphoric Acid or Oxalic Acid is recommended as a cleaning solution. Other types of cleaning solutions such as ice making machine de-scaler are available and may be used, check the manufacturer's instructions for compatability.
- Do not heat the acid solution when back flushing through the heat exchanger.
- Flush the heat exchanger with fresh water when the cleaning process is completed. A final rinse using a solution of 1 to 2% sodium hydroxide (NaOH) or sodium bicarbonate (NaHCO3) ensures all acid is neutralized.
- For optimum cleaning the cleaning solution flow rate should be a minimum 1.5 times the normal operational flow rate and preferably in a back flush mode.

⚠ WARNING

To prevent damage to the heat exchanger and refrigerant components, do not chemically clean the refrigerant circuit of the heat exchanger.

NOTICE

In some applications the heat exchanger may be subject to severe conditions, including high temperature and/or hard water conditions, causing accelerated scaling and corrosion rates, which will alter the performance of the heat exchanger. In applications where these factors are present it is important to establish a regular maintenance and cleaning schedule.

DOMESTIC WATER APPLICATIONS

- Typically the fluid circuit with the highest temperature and/or pressure should be connected to the left side connections as indicated with the colored label.
- The circuit flows should be piped in a counterflow arrangement.
- On instantenous water heating applications (applications without any storage tank) a flow switch must be used to prevent overheating of the heat exchanger.
- A three-way tempering valve/anti-scalding safety device is required.

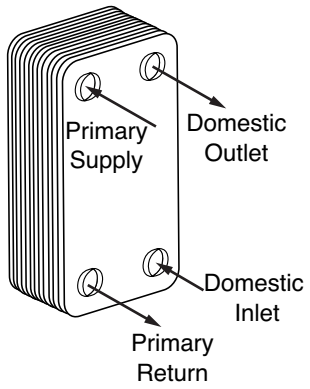

Fig. 8: Domestic Piping Arrangement

⚠ DANGER

HOT WATER CAN SCALD!

- Water temperatures over 125°F can cause severe burns instantly, or death from scalds.
- Feel water before bathing or showering.
- Consumer Product Safety Commission and some states recommend temperature settings of 130°F or less. Setting thermostat higher than 130°F will increase the risk of scald injury and cause severe personal injury or death.
- Water heated to a temperature suitable for clothes washing, dish washing and other sanitizing needs will scald and cause permanent injury.
- Children and elderly, infirm, or handicapped persons are more likely to be injured by hot water. Never leave them unattended in or near a bathtub. If anyone using hot water in the building fits this description, or if state laws or local codes require certain water temperatures at hot water faucets, take special precautions.
  - Install an automatic mixing valve at the heat exchanger or at each hot water faucet, bath and shower outlet. Selection and installation must comply with valve manufacturer's recommendation and instructions.
  - Use the lowest practical temperature setting.

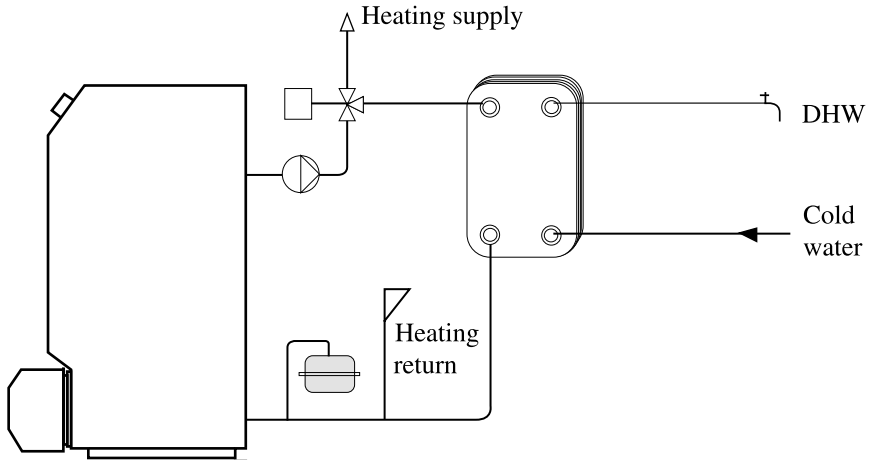

Fig. 9: Example of TTP heat exchanger providing instantaneous DHW

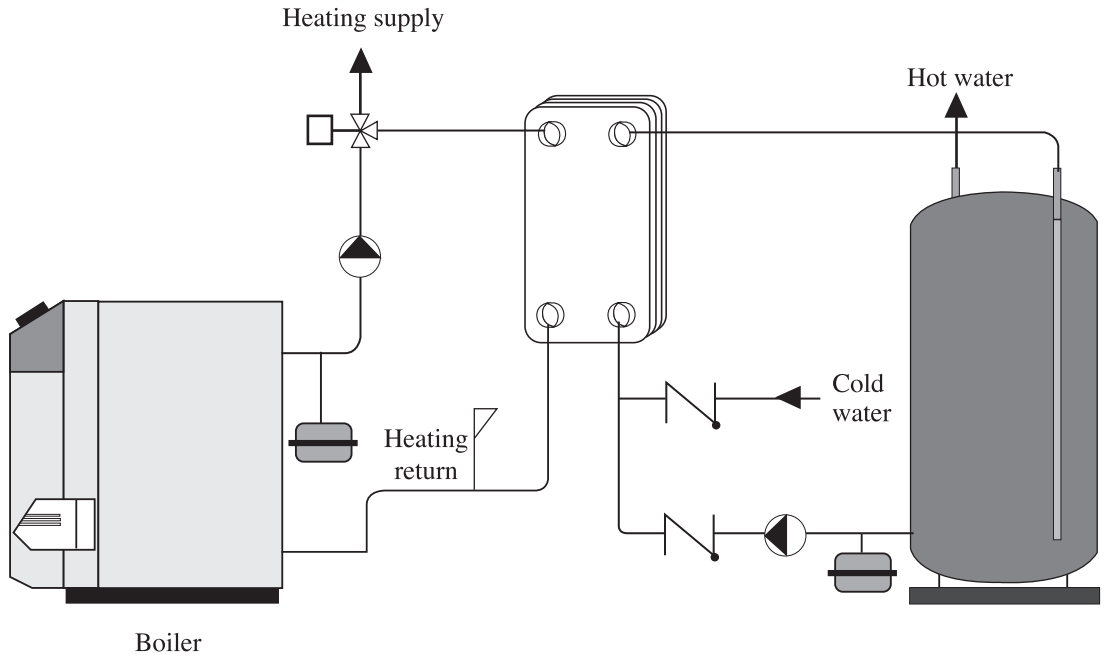

Fig. 10: Example of TTP heat exchanger combined with storage tank

Chart 2: Domestic Application Sizing

Model	Btu/hr Input	Boiler circ. Flow rate GPM	Pressure drop PSI Boiler	GPM domestic hot water @ 90° temp. rise	Pressure drop PSI Domestic	Performance GPH with 50 gal. storage tank 90° rise	
						1st hour	Continuous flow
TTP1-14E	40,000	4.1	1.8	0.9	0.1	103	53
TTP1-14E	45,000	4.6	2.3	1.0	0.1	110	60
TTP1-14E	50,000	5.1	2.9	1.1	0.1	117	67
TTP1-14E	55,000	5.6	3.5	1.2	0.1	123	73
TTP1-20E	60,000	6.1	2.0	1.3	0.1	130	80
TTP1-20E	70,000	7.2	2.8	1.6	0.1	143	93
TTP1-20E	75,000	7.7	3.3	1.7	0.1	150	100
TTP1-20E	80,000	8.2	3.7	1.8	0.1	157	107
TTP1-30E	90,000	9.2	2.6	2.0	0.1	170	120
TTP1-30E	100,000	10.2	3.3	2.2	0.1	183	133
TTP1-30E	110,000	11.3	3.9	2.5	0.2	197	147
TTP3-20	120,000	12.3	2.7	2.7	0.1	210	160
TTP3-20	130,000	13.1	3.2	2.9	0.1	223	173
TTP3-20	150,000	15.4	4.4	3.4	0.2	250	200
TTP3-40	200,000	20.5	1.5	4.5	0.1	317	267
TTP3-40	250,000	25.6	2.4	5.6	0.1	383	333
TTP3-40	300,000	30.0	3.4	6.7	0.2	452	402
TTP7L-24	350,000	36.0	4.6	7.8	0.1	518	468
TTP7L-24	400,000	41.0	4.0	8.9	0.1	584	534
TTP7M-40	450,000	46.0	3.9	10.0	0.1	650	600
TTP7M-40	500,000	51.2	4.9	11.1	0.2	716	666

Boiler Water Supply: 180 °F, Domestic Inlet Temp.: 50 °F

NOTICE

The sizing Data in Chart 2 includes only a general overview of sizing applications available. For additional or more detailed sizing parameters contact your local Triangle Tube Distributor or Triangle Tube's Engineering Department.

RADIANT AND SNOW MELT APPLICATIONS

- Typically the fluid circuit with the highest temperature and/or pressure should be connected to the left side connections as indicated with the colored label.
- The circuit flows should be piped in a counterflow arrangement.
- Use antifreeze specifically intended for hydronic heating systems. Inhibited propylene glycol is recommended.
- Typical boiler water to glycol blend is 10% to 40% depending on location and weather conditions.

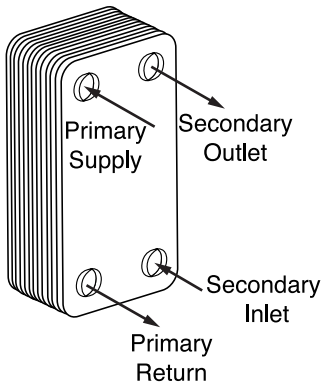

Fig. 11: Radiant/Snowmelt Arrangement

⚠ WARNING

Do not use automotive ethylene glycol or any undiluted or petroleum-based antifreeze. This can cause severe personal injury, death or substantial property damage.

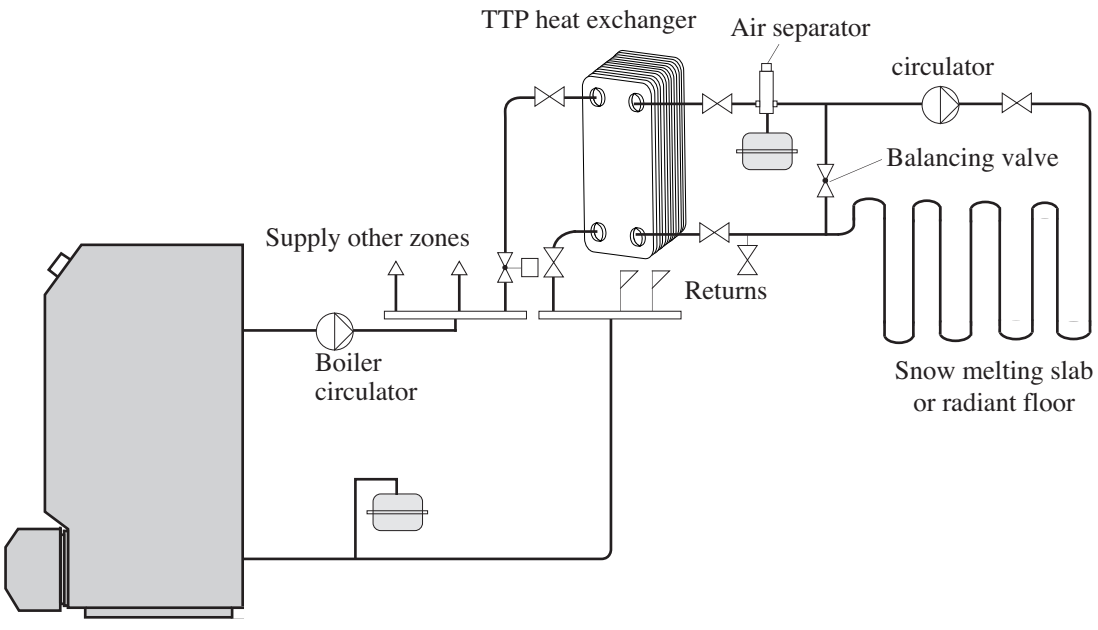

Fig. 12: Example of radiant snow melting application with TTP heat exchanger

Chart 3: Radiant/Snowmelt Application Sizing

Model	Btu/Hr Supplied	Boiler GPM	Pressure Drop PSI Boiler	Radiant/ Snowmelt GPM	Pressure Drop PSI Radiant/ Snowmelt
TTP1-14E	25,000	2.6	0.5	2.5	0.4
TTP1-14E	30,000	3.1	0.8	3.0	0.6
TTP1-14E	35,000	3.6	1.1	3.5	0.9
TTP1-14E	40,000	4.1	1.4	4.0	1.1
TTP1-14E	45,000	4.6	1.8	4.5	1.4
TTP1-14E	50,000	5.2	2.3	5.0	1.7
TTP1-14E	55,000	5.7	2.8	5.5	2.1
TTP1-14E	60,000	6.2	3.4	6.0	2.5
TTP1-14E	65,000	6.7	4.0	6.5	2.9
TTP1-14E	70,000	7.2	4.6	7.0	3.4
TTP3-20	100,000	10.3	1.6	10.1	1.3
TTP3-20	125,000	12.9	2.6	12.6	2.1
TTP3-20	150,000	15.5	3.8	15.2	3.0
TTP3-20	175,000	18.8	5.2	17.7	4.1
TTP3-20	200,000	20.6	6.9	20.2	5.5
TTP3-20	225,000	23.2	8.8	22.7	7.0

Boiler (180 ºF-160 ºF) Radiant (100 ºF-120 ºF)

NOTICE

The sizing given in Chart 3 includes only a general overview of sizing applications available. For additional or more detailed sizing parameters contact your local Triangle Tube Distributor or Triangle Tube's Engineering Department.

NOTICE

The sizing given in Chart 3 does not account for any glycol solution used in a snowmelt application.

STEAM TO WATER APPLICATIONS

- Ensure the braze plate heat exchanger is mounted vertically to allow gravity drainage of the condensate.
- The installer should use “Good Steam Practices” which include a steam trap below the unit and vacuum breakers.
- The steam circuit must enter the heat exchanger’s top connection, with the condensate leaving the heat exchanger through the bottom connection.
- Provide steam traps at critical points e.g. in front of the control valve, to prevent “pooling” of condensate.

NOTICE

Water Hammer and Other Deformations Caused By Wet Steam: A high moisture content in the steam could condense within the heat exchanger forming pools of water at critical points, exposing the system and the heat exchanger to water hammer. One critical point is the area ahead of the control valve when the valve is located ahead of the inlet to the heat exchanger. When the control valve is in the close position the stationary steam in front of the valve is subject to condense. Heat losses due to radiation and/or faulty insulation can increase the rate of condensation. Also, when the control valve is in the closed position, condensation on the plates of the heat exchanger occurs, producing a vacuum or negative pressure inside the heat exchanger. When the control valve opens to admit steam to the heat exchanger, the differential in pressure causes a sudden acceleration in the steam flow, pulling the accumulated water into the heat exchanger at a high velocity. The amount of energy produced by this water at a high velocity can be very great, resulting in heavy wear and tear and other mechanical damage in the heat exchanger, which results in potential leaks.
Avoidance Practices: On low pressure steam systems or on applications with no-continuous processes, place traps prior to the control valve and other critical points in the steam distribution system.

NOTICE

For sizing applications using steam it is recommended to contact Triangle Tube’s Engineering Department.

REFRIGERANT (CONDENSER / EVAPORATOR) APPLICATIONS

Condenser Applications

- The heat exchanger must be mounted in a vertical position to allow gravity drainage of the condensate.
- The refrigerant gas must enter the heat exchanger on the left side (as indicated by the color label) using the upper connection.
- The cooling water must enter the lower right connection of the heat exchanger and exit from the upper right connection. This will maintain the counter flow concept.

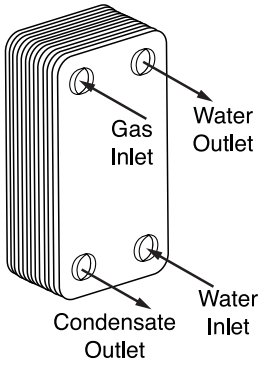

Fig.13: Condenser Applications

Evaporator Applications

- The heat exchanger must be mounted in a vertical position.
- The refrigerant gas/liquid mixture must enter the heat exchanger on the left side (as indicated by the colored label) using the lower connection.
- The water must enter the upper right connection of the heat exchanger and exit from the lower right connection. This will maintain the counter flow concept.
- The thermal expansion valve should be placed close to the inlet connection of the heat ex- changer. The thermal expansion val- ve sensing bulb should be placed on the refrigerant outlet pipe approximately 12 to 24 inches from the heat exchanger.
- A pressure differential switch or flow switch must be installed to prevent possible freeze-up due to loss of water flow.

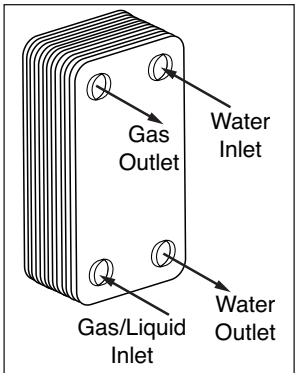

Fig.14: Evaporator Applications

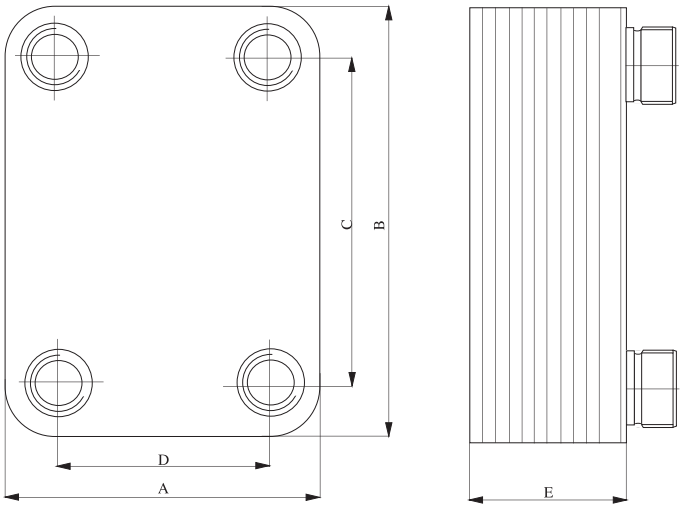

Fig.: 15 Dimensional Data

Single Wall Heat Exchangers

Model	Thread Connection NPT	Sweated Connection	Dimensions					Weight	Plates
			A	B	C	D	E		
TTP1-14E	3/4”	7/8”	2.9	8.0	6.7	1.6	1.6	3.1	14
TTP1-20E	3/4”	7/8”	2.9	8.0	6.7	1.6	1.6	3.8	20
TTP1-30E	3/4”	7/8”	2.9	8.0	6.7	1.6	1.6	4.9	30
TTP3-14	1”	1 1/8”	4.9	12.2	10.0	2.7	1.6	5.5	14
TTP3-16	1”	1 1/8”	4.9	12.2	10.0	2.7	1.8	6.2	16
TTP3-30	1”	1 1/8”	4.9	12.2	10.0	2.7	3.1	11.7	30
TTP3-36	1”	1 1/8”	4.9	12.2	10.0	2.7	3.6	14.0	36
TTP4-10	1”	1 1/8”	5.1	13.3	11.1	2.9	1.3	6.6	10
TTP4-14	1”	1 1/8”	5.1	13.3	11.1	2.9	1.6	7.8	14
TTP4-24	1”	1 1/8”	5.1	13.3	11.1	2.9	2.5	10.8	24
TTP4-30	1”	1 1/8”	5.1	13.3	11.1	2.9	3.0	12.6	30
TTP4-50	1”	1 1/8”	5.1	13.3	11.1	2.9	4.8	18.6	50
TTP4-70	1”	1 1/8”	5.1	13.3	11.1	2.9	6.6	24.6	70
TTP7-20	2”	2 1/8”	11.1	21.4	18.1	7.8	2.5	51.0	20
TTP7-24	2”	2 1/8”	11.1	21.4	18.1	7.8	2.9	55.4	24
TTP7-30	2”	2 1/8”	11.1	21.4	18.1	7.8	3.6	62.0	30
TTP7-40	2”	2 1/8”	11.1	21.4	18.1	7.8	4.6	73.0	40
TTP7-50	2”	2 1/8”	11.1	21.4	18.1	7.8	5.7	84.0	50
TTP7-60	2”	2 1/8”	11.1	21.4	18.1	7.8	6.7	95.0	60
TTP7-100	2”	2 1/8”	11.1	21.4	18.1	7.8	10.9	139.0	100
TTP7-120	2”	2 1/8”	11.1	21.4	18.1	7.8	12.9	161.0	120
TTP7-150	2”	2 1/8”	11.1	21.4	18.1	7.8	16.1	194.0	150

Double Wall Heat Exchangers

Model	Thread Connection NPT	Solder Connection	Dimensions					Weight
			A	B	C	D	E	
TTP5-8DW	1”	1 1/8”	4.9	20.80	18.80	2.9	1.0	9.2
TTP5-14DW	1”	1 1/8”	4.9	20.80	18.80	2.9	1.6	12.8
TTP5-20DW	1”	1 1/8”	4.9	20.80	18.80	2.9	2.1	16.4
TTP5-30DW	1”	1 1/8”	4.9	20.80	18.80	2.9	3.0	22.4
TTP5-50DW	1 1/4”	1 3/8”	4.9	20.80	18.80	2.9	4.8	34.4
TTP5-60DW	1 1/4”	1 3/8”	4.9	20.80	18.80	2.9	7.5	52.4
TTP5-100DW	1 1/4”	1 3/8”	4.9	20.80	18.80	2.9	9.3	64.4

Product Selection

With our computer program we will select the optimum heat exchanger for your particular applications. Please fax this selection sheet back to our Engineering Department.

Brazed Plate Heat Exchanger

Submit this information to Triangle Tube for computerized sizing assistance. Our program will select the optimum heat exchanger for your particular application.

Date: _____

Name: _____

Company: _____

Fax: _____

Job Ref.: _____

Application: _____

_____

Fax: (856) 228 3584 - Tel: (856) 228 8881

Application Parameters

	Hot Side		Cold Side	
Media	Water ☐		Water ☐	
	Glycol ☐		Glycol ☐	
	% Glycol _____		% Glycol _____	
	Steam ☐		Steam ☐	
	Steam PSI _____		Steam PSI _____	
Flow Rate	_____	GPM	_____	GPM
Temp. In	_____	DEG F	_____	DEG F
Temp. out	_____	DEG F	_____	DEG F
Max Pressure Drop	_____	PSI	_____	PSI
Capacity	_____	Btu/hr		

Double Wall Requirement ☐

Brazed Plate Heat Exchanger Design Data

OUR SELECTION: Type of Heat Exchanger: _____

	Hot Side		Cold Side	
Media	Water ☐		Water ☐	
	Glycol ☐		Glycol ☐	
	% Glycol _____		% Glycol _____	
	Steam ☐		Steam ☐	
	Steam PSI _____		Steam PSI _____	
Flow Rate	_____	GPM	_____	GPM
Temp. In	_____	DEG F	_____	DEG F
Temp. out	_____	DEG F	_____	DEG F
Max Pressure Drop	_____	PSI	_____	PSI
Capacity	_____	Btu/hr		

PRESTIGE Condensing Wall Mounted Boiler

- 95% AFUE - Enegy Star Certified
- Fully modulating
- Natural gas or propane
- Stainless Steel Construction
- Direct vent with standard schedule 40 PVC
- Outdoor Reset
- Low Nox

SMART Series Indirect Fired Water Heaters

- Exclusive “tank-in-tank” design
- Stainless steel construction
- Available in 7 sizes
- Limited LIFETIME residential warranty
- 6 year limited commercial warranty
- Self cleaning/self descaling design

Maxi-flo Pool and Spa Heat Exchangers

- Constructed of high quality corrosion resistant stainless steel (AISI 316)
- Specially designed built-in flow restrictor to assure maximum heat exchange
- Compact and light weight
- Available in 8 sizes that can accommodate any size pool or spa

ACV
TriangleTube

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