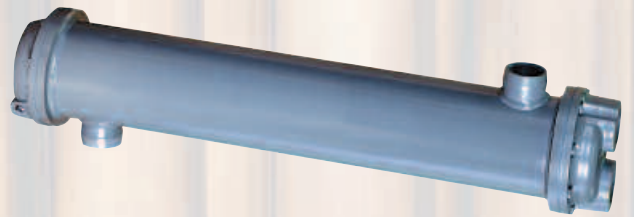
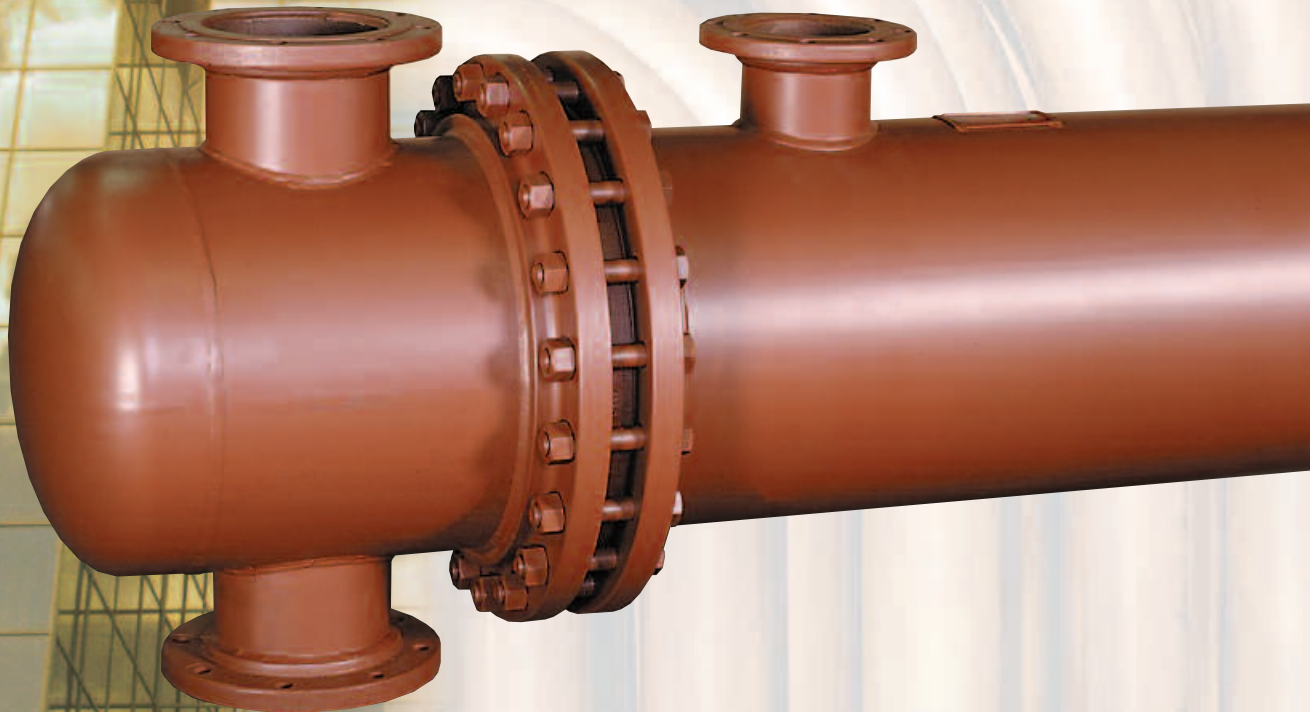


Shell & Tube Heat Exchangers

Patterson

Manufactured for Patterson by:  **Thrush**
Company, Inc.



Reliable Performance, Fast Delivery

Superior Quality, Fast Delivery

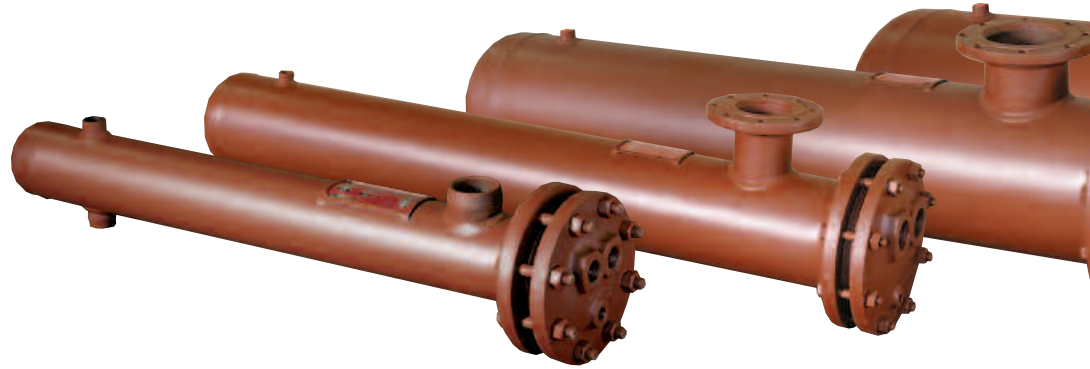
Thrush Company, Inc. manufactures specially designed shell and tube heat exchangers engineered to meet many applications including heating or cooling liquids for process systems, heat recovery, and comfort systems using steam or liquids. They are manufactured in both straight and “U” tube designs and are available with many variations in material, pressure, temperature, and special features to meet specific application requirements.



To ensure safety and optimal performance, all Thrush heat exchangers are constructed under an approved quality control program according to and registered with the National Board of Boiler and Pressure Vessel Inspectors. Additionally, each unit is manufactured, tested, and “U” stamped to ASME Code requirements under Section VIII Division 1, and a Manufacturer’s Data Report for Pressure Vessels Form No. U-1 is provided with every unit.

Let Thrush Co., Inc. provide you with superior product quality, responsive customer service and on-time delivery today.

Thrush Shell & Tube Heat Exchangers



“U” Bend ASME Code Construction

Standard Features

Type

- Steam to Water (2 or 4 Pass)
- Water to Water (2 or 4 Pass)

Sizes

- 4" to 26" diameter
- 2' to 10' length

Materials (Tubeside)

- Heads 4" to 20" cast iron, 22" to 26" fabricated steel
- Tube sheets 4" to 26" carbon steel
- Tubing 3/4" copper .035 wall thickness
- Steel baffles

Materials (Shellside)

- Carbon steel pipe with ANSI flanges

Operating Pressures (Tubeside)

- 150 psig working pressure 4" to 12" diameter with cast iron head
- 125 psig working pressure 10" to 12" diameter with 2 pass 4" NPT cast iron head
- 125 psig working pressure 14" to 20" diameter with cast iron head
- 150 psig working pressure 20" to 26" diameter with fabricated steel head

Operating Temperature (Tubeside)

- 375°F maximum operating temperature 4" to 26" cast iron or fabricated heads

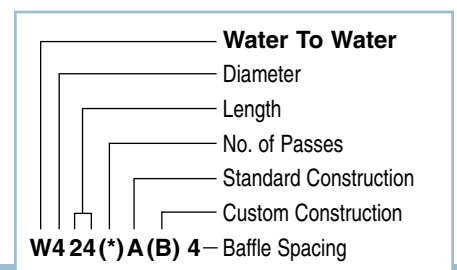
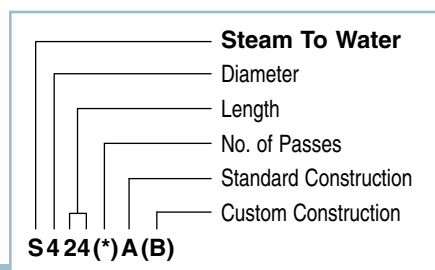
Operating Pressures (Shellside)

- 150 psig working pressure carbon steel construction (All sizes)

Operating Temperature (Shellside)

- 375°F maximum operating temperature carbon steel construction (All sizes)

Thrush Code for “U” Bend Heat Exchangers All Dimensions in Inches



and Responsive Service...



Optional Features

Materials

Heads

- Cast bronze 4" to 10" (2 or 4 Pass)
- Cast stainless steel 4" to 10" (2 or 4 Pass)
- Fabricated 300 series stainless steel 12" to 20" (2 or 4 Pass)
- Fabricated steel 4" to 20" (2 or 4 Pass)

Tubesheets

- Brass plate 4" to 18" (2 or 4 Pass)
- Type 304 stainless steel 4" to 20" (2 or 4 Pass)
- Type 316 stainless steel 4" to 20" (2 or 4 Pass)

Baffles

- Brass 4" to 20"
- Class 300 stainless steel 4" to 20"

Shell

- Series 300 stainless steel

Operating Pressure and Temperature

Heads

- 4"-8" Billet head (2 or 4 Pass) 400 psig @ 400°F
- 10"-16" Bonnet head (2 or 4 Pass) 400 psig @ 400°F
- 18"-26" Bonnet head (2 or 4 Pass) 300 psig @ 400°F

Shells

- 4"-16" Water to Water 400 psig @ 400°F
- 18"-26" Water to Water 300 psig @ 400°F

Double Wall Tube Heat Exchangers

A double wall unit consists of regular "U" Tube heads and shells.

The conversion to a double wall unit requires a tube bundle with double wall tubing and tube sheets. Sizes are 4" to 16" diameter with lengths 24" to 120". All standards and options available for heads and shells can be applied to a double wall unit. The following are the options available for a double wall tube bundle.

Tube Sheets

- Carbon steel (standard)
- 304 or 316 stainless steel (optional)

Double Wall Tubing

- .040" Copper inner tube .062" Copper outer tube (standard)
- .040" 90/10 Cupro-Nickel inner tube .040" 90/10 Cupro-Nickel outer tube (optional)



Tank Heater Units

Tank heater unit sizes are 4" to 20" diameter with 24" to 120" lengths. Standard tank heaters are constructed in accordance to ASME requirements for the same pressure and temperature ratings as the "U" Tube Heat Exchangers. A Manufacturer's Data Report for Pressure Vessels Form No. U-1 is available upon request. All options available for "U" tube heat exchangers can be applied to tank heaters

"U" Bend Tubing Chart

Material	Thickness	Max PSI	Max Temp
18 Ga. Copper	.049	400 psig	400°F
90/10 CU/NI	.049	400 psig	600°F
Carbon Steel	.065	1000 psig	650°F
304 Stainless	.049	650 psig	650°F
316 Stainless	.049	900 psig	650°F

All Dimensions in Inches

Straitube™ Heat Exchangers

Straight Tube ASME Code Construction

Standard Features

Type

- Steam to water

Models

- 120, 150, 180, 260, 320, & 380



Materials (Tubeside)

- Front head cast iron
- Rear head cast iron
- Tubing 3/4" copper .035 wall thickness

Materials (Shellside)

- Tube sheets carbon steel
- Shell carbon steel pipe

Operating Pressures (Tubeside)

- 125 psig working pressure

Operating Pressures (Shellside)

- 125 psig working pressure

Operating Temperature (Tubeside)

- 295°F

Operating Temperature (Shellside)

- 295°F

Optional Features

Materials

Heads

- Cast stainless steel (Models 260, 320, 380 only)

Tubing

Material	Thickness
18 Ga. Copper	.049
90/10 CU/NI	.049
Carbon Steel	.065
304 Stainless	.049
316 Stainless	.049

Shell

- Series 300 stainless steel (Models 260, 320, 380 only)

All Dimensions in Inches

Straitube® Selection Chart (All Capacities in GPM)

Temperature/In-Out

No.	40-120					40-140					120-180					140-180				
	Steam Pressure-PSI					Steam Pressure-PSI					Steam Pressure-PSI					Steam Pressure-PSI				
	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
*60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	-	3.0	3.5	4.5
*86	2.5	3.5	4.0	4.5	5.0	-	-	-	2.5	3.0	-	2.5	3.0	4.0	4.5	2.5	4.0	5.5	7.0	8.0
120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	5.5	-	5.0	7.0	9.0	11.0
180	-	-	6.0	7.0	7.5	-	-	-	-	-	-	-	5.0	6.5	8.0	-	7.0	9.5	12.0	14.0
260	6.0	8.0	9.5	11.0	12.5	-	-	5.0	6.0	7.0	-	6.0	8.5	10.5	13.0	7.0	11.0	15.0	19.0	22.5
320	10.0	12.0	14.0	16.5	18.0	5.0	6.5	8.0	10.0	10.0	5.5	9.0	12.0	15.0	18.0	10.5	16.0	21.0	25.5	30.0
380	14.0	17.0	20.0	22.0	25.0	8.0	10.0	12.0	14.0	16.0	8.5	12.5	16.5	20.5	24.0	14.0	21.0	27.0	33.0	38.0

* Available in Non-Code only.



2129 Ayersville Road • Toccoa, Georgia 30577
 Phone: (706) 886-2101 • Fax: (706) 886-0023
www.pattersonpumps.com