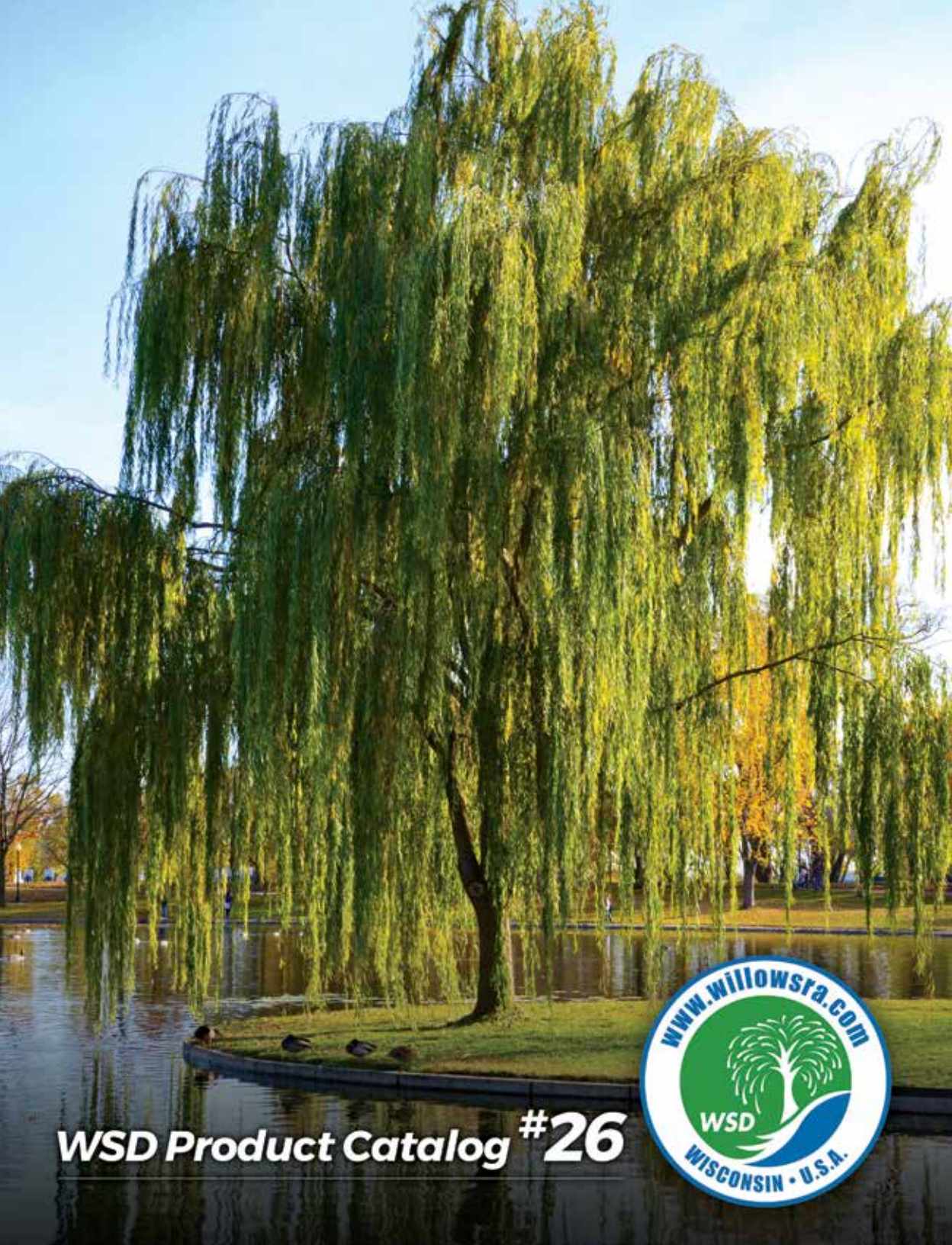

WSD Product Catalog #26
www.willowsra.com
WSD
WISCONSIN • U.S.A.

CONTENTS

KEY
- New WSD Product Lines in BLUE
- Updated Pricing in RED



HEAT EXCHANGERS

WSD Hot Water Coils 5–22
WSD Air Handlers 23–30
WSD A Coils 32–35
WSD Unit Heaters 36–37
Domestic Side Arms 38–40
Brazed Plates 42–59
Shell & Tube Exchangers 60–81
Plate & Frame, Sizing Guides 82–86





MANIFOLDS

WSD Manifold 88–89
WSD Manifold Accessories 90–93
Manifold Cut Info/Part # Guide ... 94–95
Blank Copper "Full Stick" 96–97
PEXCrimp Varieties 99–105
PEX Compression 107–116
PEX EV 118–126
PRO PEX 128–136
PEX-AL-PEX 138–145
Manifold Accessories 146–149





TUBING & FITTINGS

WSD Merflex 151
WSD PEX-AL-PEX 152
WSD PEX-A Pipe Barrier 153
WSD PEX-A Pipe SDR-9 Barrier 154
WSD PEX-B Pipe Barrier 155
WSD Pert Plumbing & Heating Access. . 156
WSD PEX-C Piping w/O2 Diffusion Barrier.. 157
WSD PEX-A Plumbing 158–159
WSD PEX-B Plumbing 160
WSD Pre-Insulated Pipe 162–168
WSD Insulated Pipe Accessories 169–170
WSD Fittings: Brass & Plastic 171–184
WSD Tools 185
WSD PEX Accessories 186–187



COVERTECH

Reflective Insulation & Tape Recommendations 190–191
rFoil 192–195
Reflective insulation 196–197
Radiant Heating Between Joists .. 198–200
Concrete Foil 201–205
NT Radiant 206–209
Metal & Post Frame Building 210–211
Adhesive Tapes 212–213



ACCESSORIES

Bell & Gosset Pumps 215–219
Elbi Tanks 220–227
Heat-Flo 228–235

ABOUT WILLOW SPRINGS SRA



The seed for Willow Springs was planted in 1993 by Dan & Karen Higgins. Through the years this company has evolved from a contractor, to wholesaler, distributor and now Willow Springs, S.R.A, LLC.

Willow Springs SRA warehouses over $1 million in products. Being located in North Central Wisconsin has helped us create a supply network to the majority of the lower 48 states. We also have our own product labeled (WSD). We have product built by other manufacturers to our specs with our private label (WSD) and we do some production in our own facilities. Willow Springs SRA utilizes Rep Agencies to help distribute through HVAC, Plumbing and Concrete wholesalers. We ship product coast to coast.

Willow Springs has custom designed products for many uses like a special heat exchanger used in x-ray equipment for the metal industry. We are very proud to say we have custom designed a heat exchanger that is used by the US Military in the production of new vehicles.

We focus on our customer's needs of getting product to them when they need it. With an inventory of over 90% of the products listed in our catalog, we have become known as "the go to guys" for specialized heating components.

We take great pride in our friendly experienced sales staff. By continuously updating our education, we are able to pass on the latest information to our customers on the applications and technical details of the products we represent.

Our friendly staff is complimented by our reliable and efficient shipping department. We average a 98.8% success rate of our same day shipping policy. In stock inventory is processed and shipped on the same day for orders received by 1:00 pm. (CST)

Physical Address:
N7071 US Highway 45
Wittenberg, WI 54499

Mailing Address:
P.O. Box L
Wittenberg, WI 54499

Phone Number:
715-253-3010



WWW.WILLOWSRA.COM

HEAT EXCHANGERS









- Water To Air
- Plate To Plate
- Shell And Tube
- Domestic Side Arm
- Replacement Coils
- JAD
- Plate And Frame
- Steam



We will quote any type or style!

WSD Hot/Chilled Water Coils

WSD	140*F/180*F	LIST	Performance Guide
Part Number	Approx. BTU Range	PRICE	
WSD 12x12	21,000 -54,500	$286.96	See PAGE 9
WSD 12x18	38,000 -80,000	$364.60	See PAGE 10
WSD 15x15	38,000 - 83,000	$367.74	See PAGE 11
WSD 16x16	39,000 - 94,000	$388.60	See PAGE 12
WSD 16x18	40,000 - 106,000	$407.76	See PAGE 13
WSD 17x22	50,000 - 133,000	$476.21	See PAGE 14
WSD 18x18	47,000 - 120,000	$456.63	See PAGE 15
WSD 18x20	49,000 - 133,000	$474.46	See PAGE 16
WSD 19x20	50,000 - 139,000	$487.65	See PAGE 17
WSD 20x19	49,000 - 136,000	$509.18	See PAGE 18
WSD 20x20	50,000 - 145,000	$524.76	See PAGE 19
WSD 22x22	69,000 - 173,000	$611.49	See PAGE 20
WSD 22x25	72,000 -197,000	$625.89	See PAGE 21
WSD 24x24	72,000 - 210,000	$664.04	See PAGE 22



10 Year Warranty Against Manufacturer Defect On Stock Coils!

Assembled in the USA
with foreign and domestic parts

- **CUSTOM SIZES AND STYLES AVAILABLE.**
- **BUILT TO YOUR SPECS.**
- **PLEASE CALL FOR DETAILS!**

These coils can be used in chilled water applications but they are not fitted with a drain pan from the factory. A pan will have to be sourced to fit your specific application.

WSD Hot/Chilled Water Coils

14 SIZES IN STOCK— READY FOR IMMEDIATE DELIVERY!

Fin Dimensions	BTU's
12" x 12"	21,000 – 54,500
12" x 18"	38,000 – 80,000
15" x 15"	38,000 – 83,000
16" x 16"	39,000 – 94,000
16" x 18"	40,000 – 106,000
18" x 18"	47,000 – 120,000
18" x 20"	50,000 – 133,000
17" x 22"	49,000 – 133,000
19" x 20"	50,000 – 139,000
20" x 19"	49,000 – 136,000
20" x 20"	50,000 – 145,000
22" x 22"	69,000 – 173,000
22" x 25"	72,000 – 197,000
24" x 24"	72,000 – 210,000

The BTU outputs stated are based on specific parameters and may vary depending on your situation.

These units do not come with a drain pan. In chilled water applications you will need to source a drain pan.



- 3 ROW COILS
- 12 FINS PER INCH
- 1" COPPER SWEAT HEADERS
- 3/8" COPPER W/ SMOOTH TUBING
- .0055" CORRUGATED ALUMINUM FINS
- 20 GAUGE CASING
  - CUSTOM COILS
  - REPLACEMENT COILS
  - A-COILS
  - CHILLER COILS

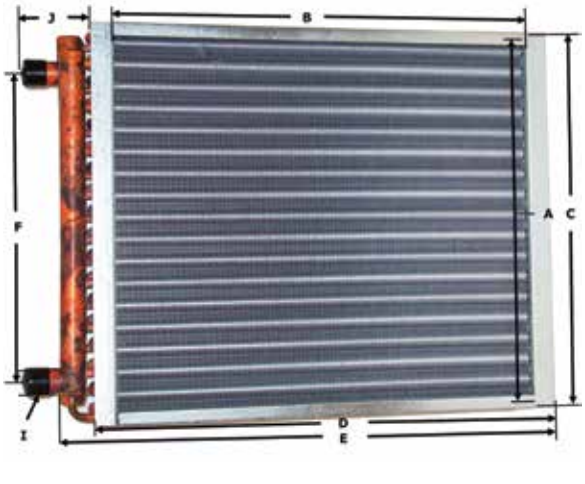
Assembled in the USA
with foreign and domestic parts

Perfect to use with:

- Outdoor Wood Boilers
- Gas Boilers
- SOLAR/GEO Systems
- Air Handlers

WSD HOT/CHILLED WATER COIL

Approximate Dimensions







Coil Size	A	B	C	D	E	F	G	H	I	J
WSD 12 x 12	12"	12"	12-1/4"	14"	15-1/2"	9"	3-1/2"	3	1"	3"
WSD 12 x 18	12"	18"	12-1/4"	20"	21-1/2"	8-1/2"	3-1/2"	3	1"	3"
WSD 15 x 15	15"	15"	15-1/4"	17"	18-1/2"	11-1/2"	3-1/2"	3	1"	3"
WSD 16 x 16	16"	16"	16-1/4"	18"	19-1/2"	13"	3-1/2"	3	1"	3"
WSD 16 x 18	16"	18"	16-1/4"	20"	21-1/4"	13"	3-1/2"	3	1"	3"
WSD 18 x 18	18"	18"	18-1/4"	20"	21-1/4"	15-1/2"	3-1/2"	3	1"	3"
WSD 18 x 20	18"	20"	18-1/4"	22"	23-1/2"	15-1/2"	3-1/2"	3	1"	3"
WSD 17 x 22	17"	22"	17-1/4"	24"	25-1/2"	13-1/4"	3-1/2"	3	1"	3"
WSD 19 x 20	19"	20"	19-1/4"	22"	23-1/2"	16"	3-1/2"	3	1"	3"
WSD 20 x 19	20"	19"	20-1/4"	21"	22-1/2"	17-1/4"	3-1/2"	3	1"	3"
WSD 20 x 20	20"	20"	20-1/4"	22"	23-1/2"	17-1/4"	3-1/2"	3	1"	3"
WSD 22 x 22	22"	22"	22-1/4"	24"	25-1/2"	19"	3-1/2"	3	1"	3"
WSD 22 x 25	22"	25"	22-1/4"	27"	28-1/2"	19-1/4"	3-1/2"	3	1"	3"
WSD 24 x 24	24"	24"	24-1/4"	26"	27-1/2"	21-1/2"	3-1/2"	3	1"	3"

Please note that these are approximate dimensions! Actual dimensions may vary slightly!!
Please see the website for more specifications and performance data.

Assembled in the USA
with foreign and domestic parts

Special Order & Custom Hot Water Coils

For custom and special order coils please try to acquire as much information as you can from this sheet.

Dimensional Data	
Finned area height:	
Finned area length:	
Finned Area Thickness:	
Casing height:	
Casing length:	
Casing thickness:	
Connection Size:	
Connection Type:	

Additional Information	
Fins per inch:	
Rows deep:	
Tubes high:	
Steam Pressure:	
System pressure:	
Drain Pan:	
Glycol Percentage:	
Thermal Expansion Valve	

Type of coil	
Evaporator:	
Condenser:	
Hot Water:	
Chilled water:	
Steam:	
Slab coil:	
A coil:	
Dual Circuit:	

Flange Style	
Outward flange:	
Inverted flange:	
Slip and Drive:	
No flange:	
Insulated Cabinet Coil:	
A coil with Drain Pan:	
Slab coil with drain pan:	
Other:	

Performance Data	
CFM:	
GPM:	
Entering Air Temp:	
Leaving Air Temp:	
Entering water Temp:	
Leaving Water Temp:	
Type of Refrigerant:	
Air pressure Drop to stay under:	
BTU's:	

Material Data	
Fin Thickness:	
Fin Material:	
Tube Thickness:	
Tube Material:	
Casing material:	
Casing thickness:	
Header size:	
Coating for corrosive environment:	

WSD 12 X 12 HOT WATER COIL

Fin Height x Fin Length	12.0 In. x 12.0 In.
Number of Tubes	12
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	1.00 Square Feet
Approx Weight of Coil	5.96 lbs.
Number of Circuits	6

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
400	80°F	58°F	400	0.23	40°F	44.8°F	6	1.92	3.04	14,375
110° F Entering Water Temperature										
600	60°F	86.57°F	600	0.26	110°F	103.05°F	5	1.11	2.53	17,232
600	60°F	87.75°F	600	0.26	110°F	104.82°F	7	2.01	3.54	17,995
600	60°F	88.46°F	600	0.26	110°F	105.86°F	9	3.13	4.56	18,457
140° F Entering Water Temperature										
400	60°F	110.16°F	400	0.13	140°F	131.19°F	5	1.03	2.53	21,686
400	60°F	111.65°F	400	0.13	140°F	133.52°F	7	1.87	3.54	22,333
400	60°F	112.53°F	400	0.13	140°F	134.87°F	9	2.92	4.56	22,714
500	60°F	106.30°F	500	0.19	140°F	129.83°F	5	1.03	2.53	25,024
500	60°F	107.96°F	500	0.19	140°F	132.47°F	7	1.87	3.54	25,921
500	60°F	108.95°F	500	0.19	140°F	134.03°F	9	2.92	4.56	26,457
600	60°F	103.11°F	600	0.26	140°F	128.64°F	5	1.03	2.53	27,960
600	60°F	104.89°F	600	0.26	140°F	131.55°F	7	1.87	3.54	29,116
600	60°F	105.97°F	600	0.26	140°F	133.27°F	9	2.92	4.56	29,812
180° F Entering Water Temperature										
400	60°F	136.02°F	400	0.13	180°F	166.46°F	5	0.95	2.53	32,871
400	60°F	138.11°F	400	0.13	180°F	170.07°F	7	1.73	3.54	33,773
400	60°F	139.34°F	400	0.13	180°F	172.15°F	9	2.7	4.56	34,303
500	60°F	130.30°F	500	0.19	180°F	164.35°F	5	0.95	2.53	37,997
500	60°F	132.64°F	500	0.19	180°F	168.45°F	7	1.73	3.54	39,258
500	60°F	134.02°F	500	0.19	180°F	170.85°F	9	2.7	4.56	40,005
600	60°F	125.56°F	600	0.26	180°F	162.49°F	5	0.95	2.53	42,521
600	60°F	128.08°F	600	0.26	180°F	167.01°F	7	1.73	3.54	44,154
600	60°F	129.58°F	600	0.26	180°F	169.68°F	9	2.7	4.56	45,128
800	60°F	123.13°F	800	0.43	180°F	168.76°F	10	3.25	5.06	54,589

WSD 12 X 18 HOT WATER COIL

Fin Height x Fin Length	12.0 In. x 18.0 In.
Number of Tubes	12
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	1.50 Square Feet
Approx Weight of Coil	8.3 lbs.
Number of Circuits	6

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
600	80°F	57.8°F	400	0.23	40°F	46.2°F	7	3.22	3.54	21,875
110° F Entering Water Temperature										
1200	60°F	82.60°F	800	0.43	110°F	98.18°F	5	1.41	2.53	29,312
1200	60°F	84.06°F	800	0.43	110°F	101.01°F	7	2.55	3.54	31,212
1200	60°F	84.97°F	800	0.43	110°F	102.74°F	9	3.99	4.56	32,385
140° F Entering Water Temperature										
800	60°F	104.00°F	533.33	0.21	140°F	124.54°F	5	1.31	2.53	38,049
800	60°F	106.01°F	533.33	0.21	140°F	128.45°F	7	2.38	3.54	39,787
800	60°F	107.21°F	533.33	0.21	140°F	130.78°F	9	3.72	4.56	40,826
1,000	60°F	99.98°F	666.67	0.31	140°F	122.44°F	5	1.31	2.53	43,216
1,000	60°F	102.15°F	666.67	0.31	140°F	126.77°F	7	2.38	3.54	45,557
1,000	60°F	103.46°F	666.67	0.31	140°F	129.39°F	9	3.72	4.56	46,974
1,200	60°F	96.73°F	800	0.43	140°F	120.64°F	5	1.31	2.53	47,641
1,200	60°F	98.99°F	800	0.43	140°F	125.32°F	7	2.38	3.54	50,582
1,200	60°F	100.38°F	800	0.43	140°F	128.17°F	9	3.72	4.56	52,381
180° F Entering Water Temperature										
800	60°F	126.81°F	533.33	0.21	180°F	156.21°F	5	1.21	2.53	57,772
800	60°F	129.69°F	533.33	0.21	180°F	162.28°F	7	2.2	3.54	60,262
800	60°F	131.39°F	533.33	0.21	180°F	165.88°F	9	3.43	4.56	61,738
1,000	60°F	120.81°F	666.67	0.31	180°F	152.93°F	5	1.21	2.53	65,729
1,000	60°F	123.93°F	666.67	0.31	180°F	159.67°F	7	2.2	3.54	69,100
1,000	60°F	125.80°F	666.67	0.31	180°F	163.73°F	9	3.43	4.56	71,130
1,200	60°F	115.94°F	800	0.43	180°F	150.12°F	5	1.21	2.53	72,564
1,200	60°F	119.23°F	800	0.43	180°F	157.40°F	7	2.2	3.54	76,827
1,200	60°F	121.22°F	800	0.43	180°F	161.83°F	9	3.43	4.56	79,410
1,200	60°F	121.95°F	800	0.43	180°F	163.46°F	10	4.14	5.06	80,357

WSD 15 X 15 HOT WATER COIL

Fin Height x Fin Length	15.0 In. x 15.0 In.
Number of Tubes	15
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	1.56 Square Feet
Approx Weight of Coil	9.17 lbs.
Number of Circuits	7

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
625	80°F	57.8°F	400	0.23	40°F	45.7°F	8	2.98	3.47	22,813
110° F Entering Water Temperature										
1200	60°F	82.57°F	768	0.4	110°F	98.19°F	5	1.03	2.17	29,275
1200	60°F	84.10°F	768	0.4	110°F	100.99°F	7	1.87	3.04	31,259
1200	60°F	85.05°F	768	0.4	110°F	102.72°F	9	2.92	3.91	32,492
140° F Entering Water Temperature										
800	60°F	104.08°F	512	0.2	140°F	124.51°F	5	0.96	2.17	38,115
800	60°F	106.18°F	512	0.2	140°F	128.41°F	7	1.74	3.04	39,937
800	60°F	107.45°F	512	0.2	140°F	130.74°F	9	2.72	3.91	41,030
1,000	60°F	100.02°F	640	0.29	140°F	122.42°F	5	0.96	2.17	43,256
1,000	60°F	102.28°F	640	0.29	140°F	126.73°F	7	1.74	3.04	45,705
1,000	60°F	103.66°F	640	0.29	140°F	129.34°F	9	2.72	3.91	47,194
1,200	60°F	96.73°F	768	0.4	140°F	120.63°F	5	0.96	2.17	47,648
1,200	60°F	99.10°F	768	0.4	140°F	125.28°F	7	1.74	3.04	50,719
1,200	60°F	100.56°F	768	0.4	140°F	128.12°F	9	2.72	3.91	52,609
180° F Entering Water Temperature										
800	60°F	127.00°F	512	0.2	180°F	156.14°F	5	0.89	2.17	57,938
800	60°F	130.01°F	512	0.2	180°F	162.19°F	7	1.61	3.04	60,544
800	60°F	131.89°F	512	0.2	180°F	165.79°F	9	2.51	3.91	62,095
1,000	60°F	120.94°F	640	0.29	180°F	152.87°F	5	0.89	2.17	65,876
1,000	60°F	124.21°F	640	0.29	180°F	159.59°F	7	1.61	3.04	69,404
1,000	60°F	126.17°F	640	0.29	180°F	163.64°F	9	2.51	3.91	71,530
1,200	60°F	116.03°F	768	0.4	180°F	150.07°F	5	0.89	2.17	72,681
1,200	60°F	119.46°F	768	0.4	180°F	157.31°F	7	1.61	3.04	77,129
1,200	60°F	121.55°F	768	0.4	180°F	161.74°F	9	2.51	3.91	79,838
1,250	60°F	121.95°F	800	0.43	180°F	164.33°F	11	3.58	4.77	83,701

WSD 16 X 16 HOT WATER COIL

Fin Height x Fin Length	16.0 In. x 16.0 In.
Number of Tubes	16
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	1.78 Square Feet
Approx Weight of Coil	10.38 lbs.
Number of Circuits	8

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
725	80°F	57.9°F	408	0.238	40°F	45.8°F	9	2.8	3.42	26,250
110° F Entering Water Temperature										
1200	60°F	83.35°F	675	0.32	110°F	97.78°F	5	0.78	1.9	30,291
1200	60°F	84.97°F	675	0.32	110°F	100.67°F	7	1.42	2.66	32,385
1200	60°F	85.97°F	675	0.32	110°F	102.45°F	9	2.22	3.42	33,685
140° F Entering Water Temperature										
800	60°F	105.50°F	450	0.16	140°F	124.01°F	5	0.73	1.9	39,346
800	60°F	107.70°F	450	0.16	140°F	128.03°F	7	1.33	2.66	41,248
800	60°F	109.02°F	450	0.16	140°F	130.43°F	9	2.08	3.42	42,388
1,000	60°F	101.37°F	562.5	0.23	140°F	121.83°F	5	0.73	1.9	44,718
1,000	60°F	103.75°F	562.5	0.23	140°F	126.27°F	7	1.33	2.66	47,293
1,000	60°F	105.20°F	562.5	0.23	140°F	128.97°F	9	2.08	3.42	48,857
1,200	60°F	98.01°F	675	0.32	140°F	119.96°F	5	0.73	1.9	49,309
1,200	60°F	100.51°F	675	0.32	140°F	124.74°F	7	1.33	2.66	52,552
1,200	60°F	102.05°F	675	0.32	140°F	127.68°F	9	2.08	3.42	54,547
180° F Entering Water Temperature										
800	60°F	129.16°F	450	0.16	180°F	155.37°F	5	0.68	1.9	59,811
800	60°F	132.31°F	450	0.16	180°F	161.61°F	7	1.23	2.66	62,535
800	60°F	134.19°F	450	0.16	180°F	165.32°F	9	1.91	3.42	64,153
1,000	60°F	123.01°F	562.5	0.23	180°F	151.95°F	5	0.68	1.9	68,111
1,000	60°F	126.44°F	562.5	0.23	180°F	158.87°F	7	1.23	2.66	71,822
1,000	60°F	128.51°F	562.5	0.23	180°F	163.06°F	9	1.91	3.42	74,055
1,200	60°F	117.99°F	675	0.32	180°F	149.02°F	5	0.68	1.9	75,228
1,200	60°F	121.62°F	675	0.32	180°F	156.49°F	7	1.23	2.66	79,926
1,200	60°F	123.82°F	675	0.32	180°F	161.06°F	9	1.91	3.42	82,787
1,400	60°F	122.57°F	787.5	0.42	180°F	165.00°F	13	3.67	4.94	94,689

WSD 16 X 18 HOT WATER COIL

Fin Height x Fin Length	16.0 In. x 18.0 In.
Number of Tubes	16
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	2.00 Square Feet
Approx Weight of Coil	11.61 lbs.
Number of Circuits	8

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
800	80°F	58.0°F	400	0.23	40°F	46.4°F	9	3.02	3.02	28,750
110° F Entering Water Temperature										
1600	60°F	81.10°F	800	0.43	110°F	95.28°F	5	0.84	1.9	36,494
1600	60°F	82.83°F	800	0.43	110°F	98.63°F	7	1.53	2.66	39,483
1600	60°F	83.92°F	800	0.43	110°F	100.73°F	9	2.39	3.42	41,367
140° F Entering Water Temperature										
800	60°F	107.23°F	400	0.13	140°F	123.40°F	5	0.79	1.9	40,843
800	60°F	109.43°F	400	0.13	140°F	127.59°F	7	1.43	2.66	42,749
800	60°F	110.75°F	400	0.13	140°F	130.09°F	9	2.24	3.42	43,884
1,000	60°F	103.07°F	500	0.19	140°F	121.08°F	5	0.79	1.9	46,553
1,000	60°F	105.48°F	500	0.19	140°F	125.73°F	7	1.43	2.66	49,159
1,000	60°F	106.93°F	500	0.19	140°F	128.55°F	9	2.24	3.42	50,732
1,200	60°F	99.66°F	600	0.26	140°F	119.09°F	5	0.79	1.9	51,446
1,200	60°F	102.21°F	600	0.26	140°F	124.10°F	7	1.43	2.66	54,754
1,200	60°F	103.77°F	600	0.26	140°F	127.18°F	9	2.24	3.42	56,774
180° F Entering Water Temperature										
800	60°F	131.71°F	400	0.13	180°F	154.46°F	5	0.73	1.9	62,013.69
800	60°F	134.87°F	400	0.13	180°F	160.96°F	7	1.32	2.66	64,748.42
800	60°F	136.74°F	400	0.13	180°F	164.82°F	9	2.06	3.42	66,362.63
1,000	60°F	125.51°F	500	0.19	180°F	150.84°F	5	0.73	1.9	70,813.06
1,000	60°F	128.99°F	500	0.19	180°F	158.06°F	7	1.32	2.66	74,576.28
1,000	60°F	131.07°F	500	0.19	180°F	162.42°F	9	2.06	3.42	76,825.70
1,200	60°F	120.42°F	600	0.26	180°F	147.73°F	5	0.73	1.9	78,374.69
1,200	60°F	124.12°F	600	0.26	180°F	155.54°F	7	1.32	2.66	83,177.18
1,200	60°F	126.36°F	600	0.26	180°F	160.31°F	9	2.06	3.42	86,081.51
1,600	60°F	121.78°F	800	0.43	180°F	163.08°F	13	3.95	4.94	106,849.30

WSD 17 X 22 HOT WATER COIL

Fin Height x Fin Length	17.0 In. x 22.0 In.
Number of Tubes	17
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	2.60 Square Feet
Approx Weight of Coil	14.95 lbs.
Number of Circuits	8

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1050	80°F	58.6°F	404	0.235	40°F	48.1°F	9	3.68	3.42	36,563
110° F Entering Water Temperature										
1600	60°F	83.27°F	616.04	0.27	110°F	93.77°F	5	1.03	1.9	40,241
1600	60°F	85.11°F	616.04	0.27	110°F	97.49°F	7	1.87	2.66	43,424
1600	60°F	86.2°F	616.04	0.27	110°F	99.83°F	9	2.92	3.42	45,399
140° F Entering Water Temperature										
1,000	60°F	106.79°F	385.03	0.12	140°F	119.44°F	5	0.96	1.9	50,384
1,000	60°F	109.26°F	385.03	0.12	140°F	124.54°F	7	1.75	2.66	53,249
1,000	60°F	110.73°F	385.03	0.12	140°F	127.62°F	9	2.72	3.42	54,831
1,300	60°F	101.76°F	500.54	0.19	140°F	116.15°F	5	0.96	1.9	58,687
1,300	60°F	104.49°F	500.54	0.19	140°F	121.85°F	7	1.75	2.66	62,521
1,300	60°F	106.14°F	500.54	0.19	140°F	125.36°F	9	2.72	3.42	64,838
1,500	60°F	99.02°F	577.54	0.24	140°F	114.28°F	5	0.96	1.9	63,274
1,500	60°F	101.87°F	577.54	0.24	140°F	120.29°F	7	1.75	2.66	67,882
1,500	60°F	103.60°F	577.54	0.24	140°F	124.04°F	9	2.72	3.42	70,699
180° F Entering Water Temperature										
1,000	60°F	130.99°F	385.03	0.12	180°F	148.40°F	5	0.89	1.9	76,738
1,000	60°F	134.56°F	385.03	0.12	180°F	156.29°F	7	1.61	2.66	80,602
1,000	60°F	136.67°F	385.03	0.12	180°F	161.04°F	9	2.51	3.42	82,602
1,300	60°F	123.48°F	500.54	0.19	180°F	143.27°F	5	0.89	1.9	89,197
1,300	60°F	127.46°F	500.54	0.19	180°F	152.12°F	7	1.61	2.66	94,798
1,300	60°F	129.85°F	500.54	0.19	180°F	157.55°F	9	2.51	3.42	98,152
1,500	60°F	119.37°F	577.54	0.24	180°F	140.36°F	5	0.89	1.9	96,265.76
1,500	60°F	123.54°F	577.54	0.24	180°F	149.69°F	7	1.61	2.66	103,027.00
1,500	60°F	126.07°F	577.54	0.24	180°F	155.49°F	9	2.51	3.42	107,120.10
2,000	60°F	121.68°F	770.05	0.4	180°F	158.85°F	13	4.82	4.94	133,344.00

WSD 18 X 18 HOT WATER COIL

Fin Height x Fin Length	18.0 In. x 18.0 In.
Number of Tubes	18
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	2.25 Square Feet
Approx Weight of Coil	13.05 lbs.
Number of Circuits	9

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
925	80°F	58.6°F	411	0.242	40°F	47.1°F	9	2.45	3.04	31,875
110° F Entering Water Temperature										
925	80°F	58.6°F	411	0.242	40°F	47.1°F	9	2.45	3.04	31,875
1600	60°F	83.58°F	711.11	0.35	110°F	98.25°F	7	1.24	2.36	40,779
1600	60°F	84.72°F	711.11	0.35	110°F	100.42°F	9	1.94	3.04	42,757
140° F Entering Water Temperature										
1,000	60°F	104.32°F	444.45	0.152	140°F	120.53°F	5	0.64	1.69	47,911
1,000	60°F	106.83°F	444.45	0.152	140°F	125.30°F	7	1.16	2.36	50,623
1,000	60°F	108.34°F	444.45	0.152	140°F	128.20°F	9	1.81	3.04	52,257
1,300	60°F	99.34°F	577.78	0.242	140°F	117.53°F	5	0.64	1.69	55,288
1,300	60°F	102.07°F	577.78	0.242	140°F	122.84°F	7	1.16	2.36	59,116
1,300	60°F	103.74°F	577.78	0.242	140°F	126.12°F	9	1.81	3.04	61,465
1,500	60°F	96.66°F	666.67	0.312	140°F	115.84°F	5	0.64	1.69	59,445
1,500	60°F	99.47°F	666.67	0.312	140°F	121.42°F	7	1.16	2.36	64,001
1,500	60°F	101.22°F	666.67	0.312	140°F	124.91°F	9	1.81	3.04	66,828
180° F Entering Water Temperature										
1,000	60°F	127.42°F	444.45	0.152	180°F	149.99°F	5	0.59	1.69	72,878
1,000	60°F	131.05°F	444.45	0.152	180°F	157.41°F	7	1.07	2.36	76,797
1,000	60°F	133.21°F	444.45	0.152	180°F	161.90°F	9	1.67	3.04	79,134
1,300	60°F	119.98°F	577.78	0.242	180°F	145.29°F	5	0.59	1.69	84,289
1,300	60°F	123.95°F	577.78	0.242	180°F	153.57°F	7	1.07	2.36	89,862
1,300	60°F	126.36°F	577.78	0.242	180°F	158.67°F	9	1.67	3.04	93,248
1,500	60°F	115.96°F	666.67	0.312	180°F	142.64°F	5	0.59	1.69	90,735
1,500	60°F	120.07°F	666.67	0.312	180°F	151.35°F	7	1.07	2.36	97,398
1,500	60°F	122.59°F	666.67	0.312	180°F	156.76°F	9	1.67	3.04	101,490
1,800	60°F	121.95°F	800	0.43	180°F	163.46°F	15	4.14	5.06	120,536

WSD 18 X 20 HOT WATER COIL

Fin Height x Fin Length	18.0 In. x 20.0 In.
Number of Tubes	18
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	2.50 Square Feet
Approx Weight of Coil	14.44 lbs.
Number of Circuits	9

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1050	80°F	58.9°F	420	0.251	40°F	47.8°F	9	2.62	3.04	35,313
110° F Entering Water Temperature										
1600	60°F	82.65°F	640	0.29	110°F	94.20°F	5	0.73	1.69	39,166
1600	60°F	84.51°F	640	0.29	110°F	97.79°F	7	1.33	2.36	42,382
1600	60°F	85.67°F	640	0.29	110°F	100.05°F	9	2.08	3.04	44,398
140° F Entering Water Temperature										
1,000	60°F	105.84°F	400	0.126	140°F	119.86°F	5	0.69	1.69	49,551
1,000	60°F	108.37°F	400	0.126	140°F	124.82°F	7	1.25	2.36	52,285
1,000	60°F	109.88°F	400	0.126	140°F	127.83°F	9	1.94	3.04	53,920
1,300	60°F	100.81°F	520	0.201	140°F	116.70°F	5	0.69	1.69	57,341
1,300	60°F	103.58°F	520	0.201	140°F	122.22°F	7	1.25	2.36	61,238
1,300	60°F	105.27°F	520	0.201	140°F	125.64°F	9	1.94	3.04	63,614
1,500	60°F	98.08°F	600	0.258	140°F	114.91°F	5	0.69	1.69	61,736
1,500	60°F	100.95°F	600	0.258	140°F	120.72°F	7	1.25	2.36	66,400
1,500	60°F	102.72°F	600	0.258	140°F	124.36°F	9	1.94	3.04	69,275
180° F Entering Water Temperature										
1,000	60°F	129.65°F	400	0.126	180°F	149°F	5	0.63	1.69	75,286
1,000	60°F	133.31°F	400	0.126	180°F	156.69°F	7	1.15	2.36	79,242
1,000	60°F	135.48°F	400	0.126	180°F	161.34°F	9	1.79	3.04	81,586
1,300	60°F	122.13°F	520	0.201	180°F	144.05°F	5	0.63	1.69	87,306
1,300	60°F	126.17°F	520	0.201	180°F	152.65°F	7	1.15	2.36	92,990
1,300	60°F	128.62°F	520	0.201	180°F	157.94°F	9	1.79	3.04	96,420
1,500	60°F	118.04°F	600	0.258	180°F	141.25°F	5	0.63	1.69	94,106
1,500	60°F	122.25°F	600	0.258	180°F	150.31°F	7	1.15	2.36	100,937
1,500	60°F	124.82°F	600	0.258	180°F	155.96°F	9	1.79	3.04	105,105
2,000	60°F	121.56°F	800	0.43	180°F	161.73°F	15	4.43	5.06	133,086

WSD 19 X 20 HOT WATER COIL

Fin Height x Fin Length	19.0 In. x 20.0 In.
Number of Tubes	19
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	2.64 Square Feet
Approx Weight of Coil	15.24 lbs.
Number of Circuits	9

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1050	80°F	58.7°F	398	0.228	40°F	48°F	9	2.78	3.04	36,094
110° F Entering Water Temperature										
1600	60°F	83.10°F	606.32	0.26	110°F	93.89°F	5	0.78	1.69	39,949
1600	60°F	84.98°F	606.32	0.26	110°F	97.55°F	7	1.41	2.36	43,206
1600	60°F	86.16°F	606.32	0.26	110°F	99.86°F	9	2.21	3.04	45,239
140° F Entering Water Temperature										
1,000	60°F	106.61°F	378.95	0.114	140°F	119.52°F	5	0.727	1.69	50,387
1,000	60°F	109.15°F	378.95	0.114	140°F	124.58°F	7	1.32	2.36	53,130
1,000	60°F	110.66°F	378.95	0.114	140°F	127.64°F	9	2.06	3.04	54,766
1,300	60°F	101.55°F	492.63	0.182	140°F	116.27°F	5	0.727	1.69	58,391
1,300	60°F	104.35°F	492.63	0.182	140°F	121.91°F	7	1.32	2.36	62,323
1,300	60°F	106.05°F	492.63	0.182	140°F	125.39°F	9	2.06	3.04	64,712
1,500	60°F	98.80°F	568.42	0.235	140°F	114.43°F	5	0.727	1.69	62,912
1,500	60°F	101.71°F	568.42	0.235	140°F	120.37°F	7	1.32	2.36	67,629
1,500	60°F	103.50°F	568.42	0.235	140°F	124.08°F	9	2.06	3.04	70,529
180° F Entering Water Temperature										
1,000	60°F	130.78°F	378.95	0.114	180°F	148.49°F	5	0.67	1.69	76,515
1,000	60°F	134.46°F	378.95	0.114	180°F	156.33°F	7	1.22	2.36	80,487
1,000	60°F	136.63°F	378.95	0.114	180°F	161.05°F	9	1.9	3.04	82,834
1,300	60°F	123.23°F	492.63	0.182	180°F	143.41°F	5	0.67	1.69	88,849
1,300	60°F	127.31°F	492.63	0.182	180°F	152.18°F	7	1.22	2.36	94,588
1,300	60°F	129.77°F	492.63	0.182	180°F	157.57°F	9	1.9	3.04	98,041
1,500	60°F	119.10°F	568.42	0.235	180°F	140.54°F	5	0.67	1.69	95,832
1,500	60°F	123.37°F	568.42	0.235	180°F	149.78°F	7	1.22	2.36	102,749
1,500	60°F	125.96°F	568.42	0.235	180°F	155.53°F	9	1.9	3.04	106,956
2,100	60°F	121.47°F	795.79	0.426	180°F	160.85°F	15	4.69	5.06	139,551

WSD 20 X 19 HOT WATER COIL

Fin Height x Fin Length	20.0 In. x 19.0 In.
Number of Tubes	20
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	2.64 Square Feet
Approx Weight of Coil	15.26 lbs.
Number of Circuits	10

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1075	80°F	58.6°F	407	0.238	40°F	47.4°F	10	2.54	3.04	37,188
110° F Entering Water Temperature										
1600	60°F	82.81°F	606.32	0.26	110°F	94.09°F	5	0.59	1.52	39,454
1600	60°F	84.73°F	606.32	0.26	110°F	97.68°F	7	1.07	2.13	42,768
1600	60°F	85.93°F	606.32	0.26	110°F	99.95°F	9	1.67	2.73	44,849
140° F Entering Water Temperature										
1,000	60°F	106.22°F	378.95	0.114	140°F	119.69°F	5	0.55	1.52	49,965
1,000	60°F	108.83°F	378.95	0.114	140°F	124.68°F	7	1	2.13	52,779
1,000	60°F	110.39°F	378.95	0.114	140°F	127.7	9	1.56	2.73	54,464
1,300	60°F	101.14°F	492.63	0.182	140°F	116.50°F	5	0.55	1.52	57,814
1,300	60°F	104.00°F	492.63	0.182	140°F	122.05°F	7	1	2.13	61,829
1,300	60°F	105.74°F	492.63	0.182	140°F	125.49°F	9	1.56	2.73	64,282
1,500	60°F	98.38°F	568.42	0.24	140°F	114.71°F	5	0.55	1.52	62,237
1,500	60°F	101.35°F	568.42	0.24	140°F	120.54°F	7	1	2.13	67,042
1,500	60°F	103.18°F	568.42	0.24	140°F	124.19°F	9	1.56	2.73	70,012
180° F Entering Water Temperature										
1,000	60°F	130.27°F	378.95	0.114	180°F	148.72°F	5	0.51	1.52	75,956
1,000	60°F	134.03°F	378.95	0.114	180°F	156.46°F	7	0.92	2.13	80,026
1,000	60°F	136.27°F	378.95	0.114	180°F	161.14°F	9	1.44	2.73	82,440
1,300	60°F	122.68°F	492.63	0.182	180°F	143.73°F	5	0.51	1.52	88,081
1,300	60°F	126.85°F	492.63	0.182	180°F	152.37°F	7	0.92	2.13	93,936
1,300	60°F	129.37°F	492.63	0.182	180°F	157.70°F	9	1.44	2.73	97,477
1,500	60°F	118.55°F	568.42	0.24	180°F	140.91°F	5	0.51	1.52	94,934
1,500	60°F	122.89°F	568.42	0.24	180°F	150.01°F	7	0.92	2.13	101,974
1,500	60°F	125.55°F	568.42	0.24	180°F	155.69°F	9	1.44	2.73	106,277
2,100	60°F	119.92°F	795.79	0.43	180°F	161.33°F	15	4.79	5.06	136,026

WSD 20 X 20 HOT WATER COIL

Fin Height x Fin Length	20.0 In. x 20.0 In.
Number of Tubes	20
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	2.78 Square Feet
Approx Weight of Coil	16.03 lbs.
Number of Circuits	10

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1100	80°F	58.7°F	396	0.226	40°F	47.6°F	10	2.62	3.04	38,125
110° F Entering Water Temperature										
1600	60°F	83.25°F	576	0.24	110°F	93.79°F	5	0.61	1.52	40,203
1600	60°F	85.18°F	576	0.24	110°F	97.45°F	7	1.11	2.13	43,556
1600	60°F	86.40°F	576	0.24	110°F	99.77°F	9	1.73	2.73	45,653
140° F Entering Water Temperature										
1,000	60°F	106.96°F	360	0.105	140°F	119.37°F	5	0.57	1.52	50,763
1,000	60°F	109.57°F	360	0.105	140°F	124.44°F	7	1.03	2.13	53,585
1,000	60°F	111.13°F	360	0.105	140°F	127.52°F	9	1.61	2.73	55,269
1,300	60°F	101.86°F	468	0.166	140°F	116.10°F	5	0.57	1.52	58,818
1,300	60°F	104.74°F	468	0.166	140°F	121.75°F	7	1.03	2.13	62,865
1,300	60°F	106.49°F	468	0.166	140°F	125.25°F	9	1.61	2.73	65,329
1,500	60°F	99.08°F	540	0.214	140°F	114.25°F	5	0.57	1.52	63,362
1,500	60°F	102.07°F	540	0.214	140°F	120.20°F	7	1.03	2.13	68,217
1,500	60°F	103.92°F	540	0.214	140°F	123.92°F	9	1.61	2.73	71,209
180° F Entering Water Temperature										
1,000	60°F	131.35°F	360	0.105	180°F	148.24°F	5	0.52	1.52	77,128
1,000	60°F	135.13°F	360	0.105	180°F	156.11°F	7	0.95	2.13	81,211
1,000	60°F	137.36°F	360	0.105	180°F	160.87°F	9	1.49	2.73	83,627
1,300	60°F	123.73°F	468	0.166	180°F	143.12°F	5	0.52	1.52	89,555
1,300	60°F	127.93°F	468	0.166	180°F	151.92°F	7	0.95	2.13	95,462
1,300	60°F	130.47°F	468	0.166	180°F	157.35°F	9	1.49	2.73	99,021
1,500	60°F	119.57°F	540	0.214	180°F	140.23°F	5	0.52	1.52	96,586
1,500	60°F	123.96°F	540	0.214	180°F	149.50°F	7	0.95	2.13	103,703
1,500	60°F	126.63°F	540	0.214	180°F	155.28°F	9	1.49	2.73	108,043
2,200	60°F	121.05°F	792	0.423	180°F	160.07°F	15	3.67	4.56	145,172

WSD 22 X 22 HOT WATER COIL

Fin Height x Fin Length	22.0 In. x 22.0 In.
Number of Tubes	20
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	3.36 Square Feet
Approx Weight of Coil	19.32 lbs.
Number of Circuits	11

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1350	80°F	58.5°F	402	0.232	40°F	47.9°F	12	3.27	3.31	47,188
110° F Entering Water Temperature										
2000	60°F	81.86°F	595.04	0.25	110°F	90.94°F	5	0.55	1.38	47,267
2000	60°F	83.99°F	595.04	0.25	110°F	95.06°F	7	1	1.93	51,865
2000	60°F	85.34°F	595.04	0.25	110°F	97.73°F	9	1.56	2.49	54,782
140° F Entering Water Temperature										
1,600	60°F	99.99°F	476.03	0.172	140°F	111.89°F	5	0.513	1.38	69,161
1,600	60°F	103.20°F	476.03	0.172	140°F	118.31°F	7	0.93	1.93	74,721
1,600	60°F	105.18°F	476.03	0.172	140°F	122.36°F	9	1.45	2.49	78,140
2,000	60°F	95.60°F	595.04	0.255	140°F	108.72°F	5	0.513	1.38	76,973
2,000	60°F	98.96°F	595.04	0.255	140°F	115.55°F	7	0.93	1.93	84,237
2,000	60°F	101.08°F	595.04	0.255	140°F	119.95°F	9	1.45	2.49	88,801
2,400	60°F	92.13°F	714.05	0.352	140°F	106.12°F	5	0.513	1.38	83,363
2,400	60°F	95.55°F	714.05	0.352	140°F	113.22°F	7	0.93	1.93	92,236
2,400	60°F	97.74°F	714.05	0.352	140°F	117.89°F	9	1.45	2.49	97,913
180° F Entering Water Temperature										
1,600	60°F	120.91°F	476.03	0.172	180°F	136.62°F	5	0.47	1.38	105,352
1,600	60°F	125.64°F	476.03	0.172	180°F	146.61°F	7	0.86	1.93	113,533
1,600	60°F	128.52°F	476.03	0.172	180°F	152.89°F	9	1.34	2.49	118,511
2,000	60°F	114.32°F	595.04	0.255	180°F	131.64°F	5	0.47	1.38	117,441
2,000	60°F	119.30°F	595.04	0.255	180°F	142.29°F	7	0.86	1.93	128,204
2,000	60°F	122.40°F	595.04	0.255	180°F	149.14°F	9	1.34	2.49	134,892
2,400	60°F	109.09°F	714.05	0.352	180°F	127.56°F	5	0.47	1.38	127,346
2,400	60°F	114.18°F	714.05	0.352	180°F	138.66°F	7	0.86	1.93	140,564
2,400	60°F	117.41°F	714.05	0.352	180°F	145.93°F	9	1.34	2.49	148,927
2,600	60°F	121.88°F	773.55	0.405	180°F	160.11°F	18	4.58	4.97	173,923

WSD 22 X 25 HOT WATER COIL

Fin Height x Fin Length	22.0 In. x 25.0 In.
Number of Tubes	22
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	3.82 Square Feet
Approx Weight of Coil	21.86 lbs.
Number of Circuits	11

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1550	80°F	58.8°F	406	0.236	40°F	48.8°F	12	3.57	3.31	52,813
110° F Entering Water Temperature										
2000	60°F	82.88°F	523.64	0.2	110°F	90.05°F	5	0.6	1.38	49,460
2000	60°F	85.08°F	523.64	0.2	110°F	94.38°F	7	1.09	1.93	54,218
2000	60°F	86.46°F	523.64	0.2	110°F	97.18°F	9	1.7	2.49	57,213
140° F Entering Water Temperature										
1,600	60°F	101.69°F	418.91	0.14	140°F	110.70°F	5	0.56	1.38	72,095
1,600	60°F	104.98°F	418.91	0.14	140°F	117.41°F	7	1.02	1.93	77,802
1,600	60°F	106.99°F	418.91	0.14	140°F	121.65°F	9	1.59	2.49	81,280
2,000	60°F	97.20°F	523.64	0.2	140°F	107.32°F	5	0.56	1.38	80,412
2,000	60°F	100.68°F	523.64	0.2	140°F	114.47°F	7	1.02	1.93	87,941
2,000	60°F	102.85°F	523.64	0.2	140°F	119.08°F	9	1.59	2.49	92,632
2,400	60°F	93.62°F	628.36	0.28	140°F	104.55°F	5	0.56	1.38	87,216
2,400	60°F	97.19°F	628.36	0.28	140°F	111.99°F	7	1.02	1.93	96,475
2,400	60°F	99.45°F	628.36	0.28	140°F	116.89°F	9	1.59	2.49	102,356
180° F Entering Water Temperature										
1,600	60°F	123.40°F	418.91	0.14	180°F	134.85°F	5	0.52	1.38	109,649
1,600	60°F	128.26°F	418.91	0.14	180°F	145.28°F	7	0.94	1.93	118,059
1,600	60°F	131.20°F	418.91	0.14	180°F	151.83°F	9	1.47	2.49	123,136
2,000	60°F	116.65°F	523.64	0.2	180°F	129.57°F	5	0.52	1.38	122,477
2,000	60°F	121.82°F	523.64	0.2	180°F	140.69°F	7	0.94	1.93	133,649
2,000	60°F	125.01°F	523.64	0.2	180°F	147.85°F	9	1.47	2.49	140,537
2,400	60°F	111.26°F	628.36	0.28	180°F	125.24°F	5	0.52	1.38	132,990
2,400	60°F	116.59°F	628.36	0.28	180°F	145.28°F	7	0.94	1.93	146,799
2,400	60°F	119.93°F	628.36	0.28	180°F	144.43°F	9	1.47	2.49	155,478
3,000	60°F	120.91°F	785.46	0.42	180°F	157.41°F	18	5.01	4.97	197,534

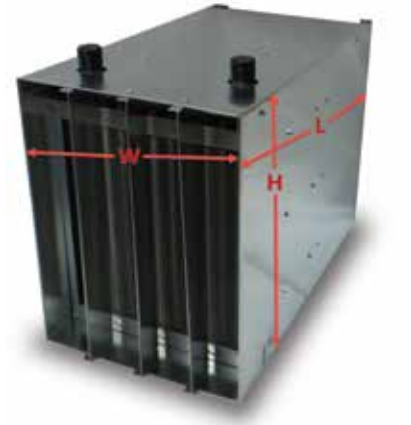
WSD 24 X 24 HOT WATER COIL

Fin Height x Fin Length	24.0 In. x 24.0 In.
Number of Tubes	24
Rows Deep x Fins Per Inch	3.0 Rows x 12.0 Fins Per Inch
Tube O.D. and Thickness	3/8 In. .014 Wall–Smooth Tube
Fin Thickness and Material	.0055 Corrugated Aluminum Fins
Face Area	4.0 Square Feet
Approx Weight of Coil	22.92 lbs.
Number of Circuits	12

CFM Flow	Entering Air Dry Bulb	Leaving Air Dry Bulb	Face Velocity SFPM	Air Pressure Drop IN, WG.	Entering Water Temp	Leaving Water Temp	GPM # Gallon	Water Pressure Drop in FTHD	Liquid Velocity FPS	Total BTU BTU/HR
40° F Entering Water Temperature (Drain pan not included)										
1550	80°F	58.8°F	406	0.236	40°F	48.8°F	12	3.57	3.31	52,813
110° F Entering Water Temperature										
2400	60°F	80.77°F	600	0.26	110°F	88.27°F	5	0.5	1.27	53,876
2400	60°F	83.06°F	600	0.26	110°F	92.77°F	7	0.91	1.77	59,825
2400	60°F	84.54°F	600	0.26	110°F	95.74°F	9	1.42	2.28	63,652
140° F Entering Water Temperature										
1,600	60°F	101.96°F	400	0.126	140°F	110.51°F	5	0.47	1.27	72,566
1,600	60°F	105.33°F	400	0.126	140°F	117.24°F	7	0.85	1.77	78,400
1,600	60°F	107.39°F	400	0.126	140°F	121.24°F	9	1.32	2.28	81,960
2,000	60°F	97.43°F	500	0.19	140°F	107.11°F	5	0.47	1.27	80,919
2,000	60°F	100.99°F	500	0.19	140°F	114.27°F	7	0.85	1.77	88,615
2,000	60°F	103.21°F	500	0.19	140°F	118.91°F	9	1.32	2.28	93,420
2,400	60°F	93.82°F	600	0.26	140°F	104.34°F	5	0.47	1.27	87,742
2,400	60°F	97.47°F	600	0.26	140°F	111.78°F	7	0.85	1.77	97,204
2,400	60°F	99.79°F	600	0.26	140°F	116.69°F	9	1.32	2.28	103,230
180° F Entering Water Temperature										
1,600	60°F	123.84°F	400	0.126	180°F	134.53°F	5	0.43	1.27	110,417
1,600	60°F	128.81°F	400	0.126	180°F	144.99°F	7	0.78	1.77	119,013
1,600	60°F	131.82°F	400	0.126	180°F	151.59°F	9	1.22	2.28	124,207
2,000	60°F	117.04°F	500	0.19	180°F	129.22°F	5	0.43	1.27	123,315
2,000	60°F	122.32°F	500	0.19	180°F	140.37°F	7	0.78	1.77	134,734
2,000	60°F	125.58°F	500	0.19	180°F	147.56°F	9	1.22	2.28	141,789
2,400	60°F	111.60°F	600	0.26	180°F	124.88°F	5	0.43	1.27	133,864
2,400	60°F	117.04°F	600	0.26	180°F	136.47°F	7	0.78	1.77	147,983
2,400	60°F	120.47°F	600	0.26	180°F	144.11°F	9	1.22	2.28	156.875
3,200	60°F	120.78°F	800	0.43	180°F	158.36°F	20	5.02	5.06	210.256

WSD 12 X 12 AIR-HANDLER

Part# WSD-12AH



Unit Shown with Optional Louvers

12”x 12” Water to Air Heat Exchanger with 500 CFM. Rotom Blower that can produce over 40,000 BTU’s/hr. The unit also has its own filter rack. Filter included!

This unit is perfect for small garages or work shops!!

Uses WSD 12 x 12 coil from **page 9.**

LIST Price: $955.56

Louvers sold separately: $22.22 per piece

Does not include any controls

CASE DIMENSIONS:

- LENGTH - 22 1/4”
- WIDTH - 12 1/2”
- HEIGHT - 15 3/4”
- 1” COIL CONNECTIONS
- WEIGHT- 35 LBS

0.00 SP	0.10 SP	0.20 SP	0.30 SP	0.40 SP	0.50 SP	0.60 SP	0.70 SP	0.80 SP
549 CFM	538 CFM	510 CFM	500 CFM	480 CFM	450 CFM	435 CFM	390 CFM	360 CFM





WSD MULTIPOSITION AIR HANDLER

Hydronic Heat

FEATURES:

- PSC air handler
- Four-Way Multiposition
- Electronic fan control board
- Dry contacts to energize pump and boiler
- EAC and Humidifier contacts
- Pump timer for recirculation
- Adjustable blower time delay
- Dehumidification selection
- Efficient low continuous fan selection
- Bottom or side returns
- Supports two-stage outdoor units
- Blower assembly slides out for easy maintenance
- Cabinet is heavy gauge galvanized steel, pre-painted a durable neutral gray
- 1" foil faced insulation
- All units are suitable for "0" inch clearance to combustible materials





OPTIONS:

- Hot water circulating pumps
- Matching Summit cased coils
  - Draw-through for AC
  - Blow-through for HP or AC

Model	Nominal	Motor	Unit Dim in (mm)	Ship. Dim. In (mm)	Unit Wt	Ship Wt
Series	Tons	Hp	H x W x D	H x W x D	lbs/kg Approx	lbs/kg Approx
MPS0S4NAA	1.5 - 2.0	1/3HP	29 X 17.5 X 21	33 X 21.5 X 25	78/35.4	95/43
			(737 X 445 X 534)	(838 X 546 X 635)		
MMPS0M4NAA	1.5 - 3.0	1/2HP	29 X 21 X 21	33 X 25 X 25	100/45.4	115/52
			(737 X 534 X 534)	(838 X 635 X 635)		
MMPS0L4NAA	3.5 - 5	3/4HP	29 X 24 1/2 X 21 3/4	33 X 28.5 X 25 3/4	132/59.9	150/68
			(737 X 622 X 553)	(838 X 724 X 654)		

WSD SMALL AIR-HANDLER

Part# 1-MMPS0S4NAA



MMPS0S4NAA 1.5 to 2.5 ton, NO pump, 4 row Singal Speed PSC Motor

Note: these are single speed psc motors

LIST Price: $1391.67

Made in the USA!

Not for Sale in California



WSD MEDIUM AIR HANDLER

Part# 2-MMPS0M4NAA



MMPS0M4NAA 1.5 to 3 ton NO pump 4 row Singal Speed PSC Motor

Note: these are single speed psc motors

LIST Price: $1,483.33

Made in the USA!

Not for Sale in California



WSD LARGE AIR HANDLER

Part# 3-MMPS0L4NAA



MMPS0L4NAA 3.5 to 6 ton NO pump 4 row Singal Speed PSC Motor

Note: these are single speed psc motors

LIST Price: $1,661.11

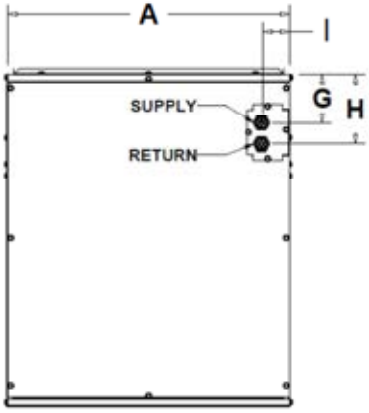
Made in the USA!

Not for Sale in California

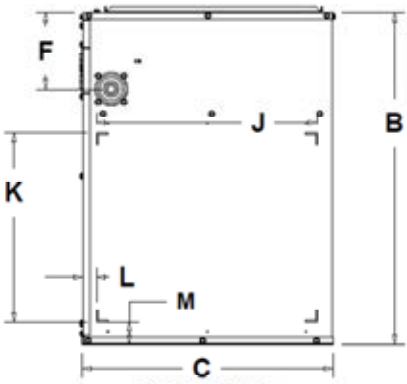


WSD MULTIPOSITION AIR HANDLER

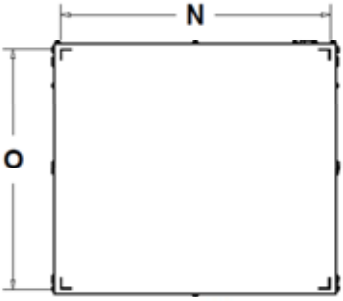
Hydronic Heat



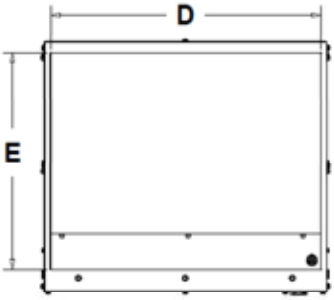
FRONT



RIGHT SIDE
LEFT SIDE IS MIRROR IMAGE

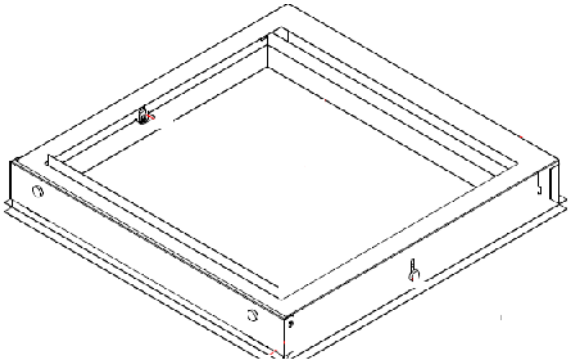


BOTTOM



TOP

DIMENSIONAL DATA MODULAR AIR HANDLER															
	OVERALL DIMENSIONS			TOP PLENUM						SIDE RETURN				BOTTOM RETURN	
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
MMPSOS	17.50	29.00	21.00	16.00	18.00	6.75	3.88	2.50	19.25	16.50	1.13	1.94	16.50	16.50	20.00
MMPSOM	21.00	29.00	21.00	18.88	18.00	6.75	3.88	2.50	19.25	16.50	1.13	1.94	20.00	20.00	20.00
MMPSOL	24.50	29.00	21.75	23.50	18.75	6.75	6.00	2.50	19.25	16.50	1.13	1.94	23.50	23.50	20.94



Filter Kits with 1" Throw away filter, accepts 2"		
For Model	For Bottom Return	For Side Return
MMPS0S4NAA	86ET0002	86ET0002
MMPS0M4NAA	86ET0001	86ET0001
MMPS0L4NAA	86ET0003	86ET0001 (requires (2), one on each side)

SPECIAL ORDER - CALL FOR PRICE.

Fan Data									
Cabinet Size	Blower Housing	Motor Voltage	Motor HP	Motor Tap	CFM @ External Static Pressure In-WC				
					0.10"	0.20"	0.30"	0.40"	0.50"
	10 x 7	120	1/3	H	982	931	885	828	757
MMPS0S4NAA				M	925	881	835	779	726
				L	859	822	776	735	674
	10 x 7	120	1/2	H	1448	1378	1304	1222	1154
MMPS0M4NAA				M	1280	1230	1169	1115	1035
				L	1087	1070	1035	999	941
	12 x 9	120	3/4	H	2092	2029	1979	1898	1852
MMPS0L4NAA				M	1756	1723	1689	1664	1612
				L	1462	1452	1432	1402	1371

WSD HOT WATER CAPACITY-BOILER LOOP

65˚F EAT 180˚F EWT 20˚F Δt (NO PUMP)

MODEL	CFM	GPM	BTUH	LAT °F	LWT °F	APD IWC	WPD FT	ROWS	FPI
MMPS0S4NAA	600	5.6	54,740	149.1	160	0.18	2.7	4	10
	700	6.3	61,510	146	160	0.23	3.3	4	10
	800	7	67,890	143.3	160	0.29	4	4	10
	900	7.6	73,928	140.7	160	0.35	4.6	4	10
MMPS0M4NAA	600	5.6	54,160	148.2	160	0.15	3.1	4	10
	800	6.9	67,160	142.4	160	0.24	4.4	4	10
	900	7.5	73,140	139.9	160	0.29	4.9	4	10
	1000	8.1	78,830	137.7	160	0.34	5.2	4	10
	1200	9.2	89,455	133.7	160	0.46	5.7	4	10
	1400	10.2	99,230	130.4	160	0.6	6.6	4	10
MMPS0L4NAA	1200	10.1	98,890	144	160	0.23	1.7	4	10
	1400	11.4	111,020	141.1	160	0.31	2.1	4	10
	1600	12.6	122,430	138.6	160	0.39	2.5	4	10
	1800	13.7	133,200	136.2	160	0.47	3	4	10
	2000	14.7	143,400	134.1	160	0.57	12.7	4	10
	2100	15.4	147,245	132	160	0.46	13.9	4	10
	2200	15.1	147,400	126.8	160	1.05	9.5	4	10

WSD HOT WATER CAPACITY - WITH FACTORY PUMP

65 ° F EAT @ STATED GPM - NOTE: Special Order Only

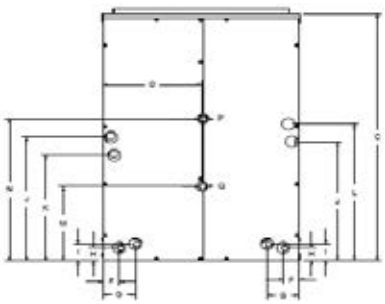
MODEL	CFM	GPM	BTUH	BTUH	BTUH	BTUH	BTUH	APD	ROWS	FPI
MMPS0S4NAA	500	4	21,870	25,930	30,015	34,110	38,225	0.13	4	12
	600	4	24,620	29,215	33,820	38,460	43,115	0.18	4	12
	700	4	27,050	32,108	37,195	42,305	47,440	0.23	4	12
	800	4	29,210	34,680	40,190	45,725	51,295	0.29	4	12
	900	4	31,140	36,990	42,845	48,800	54,755	0.35	4	12
MMPS0M4NAA	600	4	24,840	29,415	34,005	38,605	43,200	0.15	4	12
	800	4	29,770	35,270	40,785	46,315	51,860	0.24	4	12
	900	4	31,895	37,790	43,710	49,645	55,595	0.29	4	12
	1,000	4	33,836	40,100	46,385	52,685	59,010	0.34	4	12
	1,200	4	37,260	44,165	51,104	58,065	65,045	0.46	4	12
MMPS0L4NAA	1,400	4	40,195	47,660	55,150	62,670	70,220	0.6	4	12
	1,200	7	44,170	52,530	60,960	69,460	78,020	0.23	4	10
	1,400	7	48,080	57,220	66,640	75,750	85,130	0.31	4	10
	1,600	7	51,490	61,310	71,230	81,250	91,340	0.39	4	10
	1,800	7	54,490	64,910	75,450	86,090	96,820	0.47	4	10
	2,000	7	57,160	68,120	79,200	90,400	101,710	0.57	4	10
	2,100	7	58,380	69,590	80,930	93,380	103,750	0.62	4	10
	2,200	7	59,200	70,400	81,600	92,900	104,400	1.05	4	10

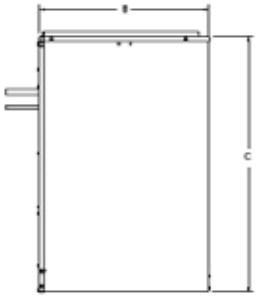
NOTES

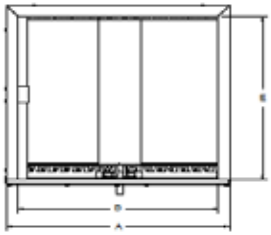
WSD Hot Water / Chilled Water A-Coils

Part #	Description	List Price
CW024A8K3MCC	CW024A8K3MCC Cased Hot water Chilled water "A" coil with drain pan	$1,191.67
CW036A8K5MEC	CW036A8K5MEC Cased Hot water Chilled water "A" coil with drain pan	$1,322.22
CW048A9K9MGC	CW048A9K9MGC Cased Hot water Chilled water "A" coil with drain pan	$1,944.44

DIMENSIONS AND SPECIFICATIONS

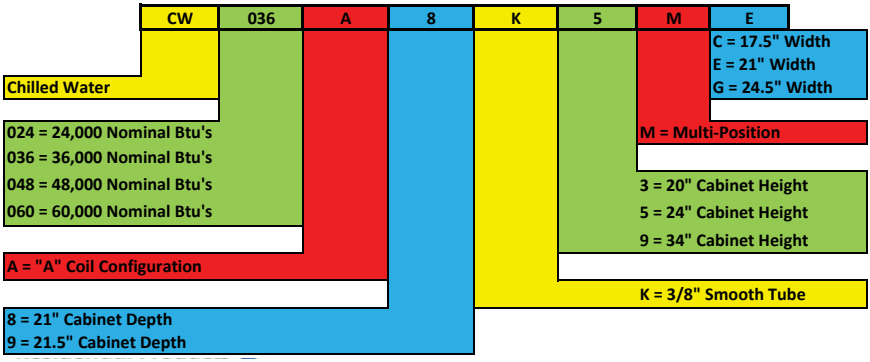






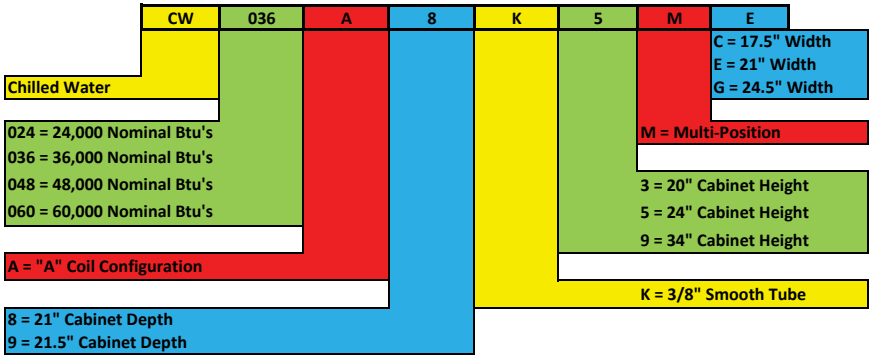
	CW024A8K3MC	CW036A8K5ME	CW048A9K9MG	CW060A9K9MG
A	17.5"	21"	24.5"	24.5"
B	21"	21"	21.5"	21.5"
C	20"	24"	34"	34"
D	15-1/8"	18-5/8"	22"	22"
E	19-1/8"	19-1/8"	19-7/8"	19-7/8"
F	2-1/8"	4"	2-3/16"	2-3/16"
G	4-1/8"	6"	4-3/16"	4-3/16"
H	1-1/2"	1-11/16"	1-7/8"	1-7/8"
I	2"	2-1/4"	2-1/4"	2-1/4"
J	11"	13"	17-1/4"	17-1/4"
K	8-3/8"	10-7/16"	14-3/4"	14-3/4"
L	13-5/8"	15-9/16"	19-3/4"	19-3/4"
M	4-13/16"	7-3/4"	10-1/4"	10-1/4"
N	13-1/2"	14-9/16"	19-9/16"	19-9/16"
O	8-3/4"	10-1/2"	12-1/2"	12-1/2"
P	7/8"	7/8"	7/8"	7/8"
Q	7/8"	7/8"	1-1/8"	1-1/8"

WSD CW SERIES CASED MULTIPOSITION CHILLED WATER A COILS



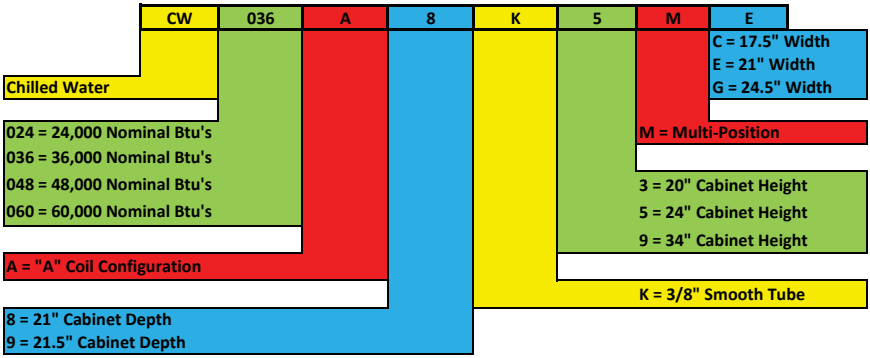
CHILLED WATER COIL MODEL	Cooling Performance Data: Cooling Capacities @ Entering Water Temperature 80°F / 67°F / 45°F Total	80°F / 67°F / 45°F Sensible	80°F / 67°F / 42°F Total	80°F / 67°F / 42°F Sensible	CFM	GPM	PRESS. DROP WATER (FT-WTR)	PRESS. DROP AIR (WC)
CW024A8K3MC	16,640	11,680	18,515	12,495	400	2	0.53	0.06
	20,546	13,446	22,871	14,532		4	1.81	
	21,992	14,125	24,492	15,347		6	3.71	
	19,765	15,353	21,855	16,161	600	2	0.53	0.12
	26,171	17,979	29,062	19,394		4	1.81	
	29,218	19,394	32,500	21,010		6	3.71	
	21,875	18,669	24,101	19,469	800	2	0.53	0.19
	30,078	21,869	33,437	23,469		4	1.81	
	34,531	23,736	38,486	25,603		6	3.71	
	22,773	20,296	25,000	21,191	900	2	0.53	0.24
	31,640	23,877	35,156	25,071		4	1.81	
	36,778	25,967	40,859	27,459		6	3.71	
CW036A8K5ME	33,828	23,658	37,656	25,272	800	5	1.81	0.13
	37,393	25,272	41,562	26,885		7	3.29	
	39,531	26,078	44,062	28,229		9	5.19	
	37,656	27,337	41,796	29,337	1000	5	1.81	0.19
	42,226	29,337	47,089	31,334		7	3.29	
	45,292	30,677	50,625	33,004		9	5.19	
	40,585	30,941	45,000	32,925	1200	5	1.81	0.28
	46,250	33,322	51,406	35,305		7	3.29	
	50,156	34,908	55,937	37,288		9	5.19	
	43,164	34,411	47,812	36,246	1400	5	1.81	0.34
	49,531	36,705	55,000	38,999		7	3.29	
	54,179	38,541	60,312	41,293		9	5.19	
CW048A9K9MG CW060A9K9MG	52,578	36,317	58,490	38,738	1200	8	2.42	0.12
	56,093	37,931	62,431	40,353		10	3.59	
	59,492	39,142	66,127	42,370		13	5.72	
	56,731	40,280	63,203	43,090	1400	8	2.42	0.17
	61,093	42,153	67,968	44,963		10	3.59	
	65,512	44,027	72,968	47,305		13	5.72	
	60,468	44,190	67,089	46,852	1600	8	2.42	0.21
	65,312	45,787	72,812	48,981		10	3.59	
	70,781	48,449	78,882	52,176		13	5.72	
	63,593	47,652	70,625	50,631	1800	8	2.42	0.25
	69,214	50,035	77,097	53,013		10	3.59	
	75,468	52,418	83,906	55,992		13	5.72	
	66,360	50,676	73,593	53,966	2000	8	2.42	0.3
	77,578	53,308	80,781	56,599		10	3.59	
	79,492	56,599	88,593	60,548		13	5.72	

WSD CW SERIES CASED MULTIPOSITION CHILLED WATER A COILS



CHILLED WATER COIL MODEL	Heating Performance Data: Hot Water Capacities @ 70° Entering Air Temperature, Entering Water Temperature 100° F	105° F	110° F	115° F	CFM	GPM	PRESS. DROP WATER (FT-WTR)	PRESS. DROP AIR (WC)
CW024A8K3MC	11,767	13,746	15,728	17,714	400	2	0.44	0.06
	12,439	14,521	16,604	18,689		4	1.51	
	12,603	14,709	16,816	18,924		6	2.99	
	15,627	18,268	20,917	23,575	600	2	0.44	0.12
	17,591	20,546	23,505	26,469		4	1.51	
	18,143	21,182	24,224	27,269		6	2.99	
	18,305	21,407	24,521	27,645	800	2	0.44	0.19
	21,880	25,567	29,263	32,966		4	1.51	
	23,016	26,881	30,752	34,630		6	2.99	
	19,329	22,607	25,897	29,199	900	2	0.44	0.24
	23,737	27,742	31,757	35,783		4	1.51	
	25,216	29,455	33,703	37,958		6	2.99	
CW036A8K5ME	23,145	27,034	30,931	34,834	800	5	1.51	0.08
	23,852	27,851	31,855	35,864		7	2.75	
	24,211	28,265	32,323	36,385		9	4.18	
	27,351	31,959	36,578	41,208	1000	5	1.51	0.11
	28,574	33,375	38,184	43,001		7	2.75	
	29,216	34,116	39,023	43,936		9	4.18	
	30,962	36,190	41,482	46,688	1200	5	1.51	0.15
	32,783	38,302	43,832	49,374		7	2.75	
	33,767	39,440	45,723	50,815		9	4.18	
	34,069	39,829	45,610	51,408	1400	5	1.51	0.19
	36,535	42,695	48,871	55,062		7	2.75	
	37,903	44,281	50,672	57,074		9	4.18	
CW048A9K9MG CW060A9K9MG	35,510	41,050	46,960	52,878	1200	8	2.02	0.07
	35,815	41,818	47,828	53,846		10	3	
	36,382	42,472	48,568	54,669		13	4.61	
	39,642	46,307	52,985	59,674	1400	8	2.02	0.09
	40,628	47,447	54,277	61,117		10	3	
	41,484	48,436	55,396	62,364		13	4.61	
	43,731	51,093	58,472	65,866	1600	8	2.02	0.12
	45,083	52,659	60,250	67,854		10	3	
	46,275	54,034	61,813	69,597		13	4.61	
	47,450	55,447	63,468	71,505	1800	8	2.02	0.14
	49,202	57,481	65,776	74,089		10	3	
	50,770	59,297	67,837	76,391		13	4.61	
	50,836	59,415	68,018	76,643	2000	8	2.02	0.17
	53,010	61,939	70,889	78,859		10	3	
	54,987	64,230	73,491	82,767		13	4.61	

WSD CW SERIES CASED MULTIPOSITION CHILLED WATER A COILS



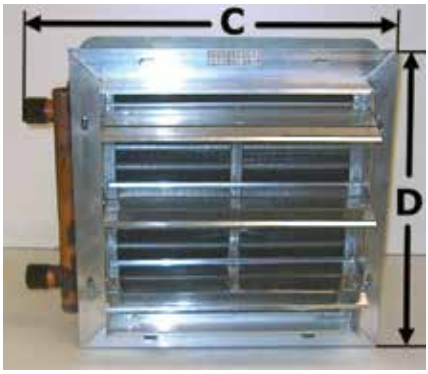
Heating Capacities					
MODEL NUMBER	120° F EWT 20° F Δ 68° F EDB				
	BTUH	LAT	GPM	APD	WPD
CW024A8K3MC	30,340	103	3.1	0.16	1.9
CW036A8K5ME	42,790	100.9	4.3	0.25	1.6
CW048A9K9MG	58,080	101.5	5.9	0.22	2.2
CW060A9K9MG	75,600	102.9	7.6	0.21	3.5

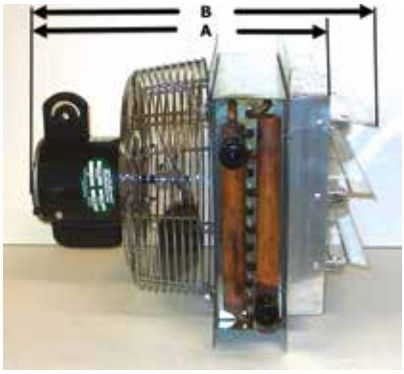
Heating Capacities					
MODEL NUMBER	140° F EWT 20° F Δ 68° F EDB				
	BTUH	LAT	GPM	APD	WPD
CW024A8K3MC	46,660	121.8	4.7	0.16	2.1
CW036A8K5ME	66,370	119	6.7	0.25	3.6
CW048A9K9MG	89,870	119.8	9.1	0.22	1.8
CW060A9K9MG	115,190	121.1	11.7	0.21	3.1

Heating Capacities					
MODEL NUMBER	160° F EWT 20° F Δ 68° F EDB				
	BTUH	LAT	GPM	APD	WPD
CW024A8K3MC	62,590	140.1	6.4	0.16	3.6
CW036A8K5ME	89,480	136.8	9.1	0.25	2.5
CW048A9K9MG	120,990	137.7	12.3	0.22	3.1
CW060A9K9MG	153,970	139	15.7	0.21	3.2

Heating Capacities					
MODEL NUMBER	180° F EWT 20° F Δ 68° F EDB				
	BTUH	LAT	GPM	APD	WPD
CW024A8K3MC	78,340	158.3	8	0.16	2.4
CW036A8K5ME	112,340	154.3	11.5	0.25	3.8
CW048A9K9MG	151,770	155.5	15.6	0.22	2.8
CW060A9K9MG	192,360	156.7	19.7	0.21	4.7

WSD Unit Heaters





4 SIZES IN STOCK TO CHOOSE FROM!

WSD 12" Unit Heater	WSD 16" Unit Heater	WSD 20" Unit Heater	WSD 24" Unit Heater
Part# WSD-12UH	**Part# WSD-16UH**	**Part# WSD-20UH**	**Part# WSD-24UH**
Weight 25 lbs	Weight 34 lbs	Weight 49 lbs	Weight 67 lbs
Dimensions	**Dimensions**	**Dimensions**	**Dimensions**
A: 17"	A: 17"	A: 17"	A: 18"
B: 19.5"	B: 19.5"	B: 19.5"	B: 20.5"
C: 17.5"	C: 21.5"	C: 25.5"	C: 29.5"
D: 15"	D: 19"	D: 23"	D: 27"
1" Connection	1" Connection	1" Connection	1" Connection
Estimated BTU's @180° 55,000	Estimated BTU's @180° 95,000	Estimated BTU's @180° 145,000	Estimated BTU's @180° 210,000
List Price: $702.88	**List Price: $851.27**	**List Price: $1107.59**	**List Price: $1265.82**

All Models come wired with a 10' cord for 120V but can be wired for 240V and are also variable speed rated up to 30% reduction with a proper controller. Controller is not included.

BTU outputs are just estimations. Unit performance will greatly vary depending on water temps, air temps, Flow, and CFM..

WSD UNIT HEATER FEATURES

- **Unbelievably smooth and quiet operation.**
- **Comes totally assembled out of the box.**
- **No Electrician required when plugged into a locally approved electrical circuit.**
- **Aluminum blade with a zinc plated steel hub balanced for smooth, vibration free operation. Pitch is designed to correlate with motor horsepower to deliver maximum efficiency.**
- **Chrome grill allows for easy cleaning and meets OSHA guidelines. OSHA approved on interior wall and approved on exterior wall when mounted 7' above ground.**
- **10' cord attached is wired for 120 volt plug.**
- **Extremely energy efficient, totally enclosed, maintenance free, direct drive high efficiency motors have completely sealed ball bearings, UL and ULC certification, and built in automatic thermal overload protection.**

Part#	HP	Volt Wired for	Amps	HZ	Noise H/Low DB	Phs	Speed	Cord
WSD-12UH	1/10	115	1	60	56/50	1	S/Var	10'
WSD-16UH	1/10	115	1	60	56/50	1	S/Var	10'
WSD-20UH	1/3	115	3.5	60	58/52	1	S/Var	10'
WSD-24UH	1/2	115	4.8	60	60/54	1	S/Var	10'

The WSD Unit Heater fan consists of an agricultural grade, variable speed motor with a 10' cord. The motor is attached with a heavy duty chrome plated OSHA approved guard. The coil is covered by an aluminum shutter with tie bar to eliminate shutter flapping and locking open.

Assembled in the USA
with foreign and domestic parts

WSD Domestic Sidearm Exchangers

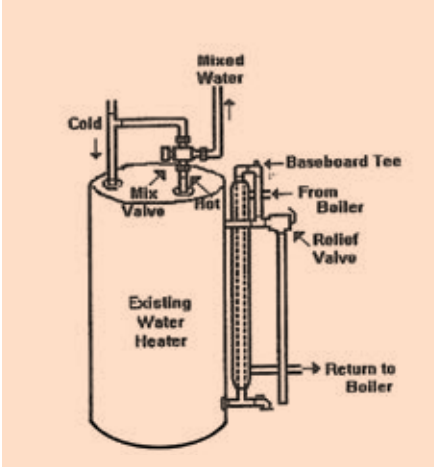


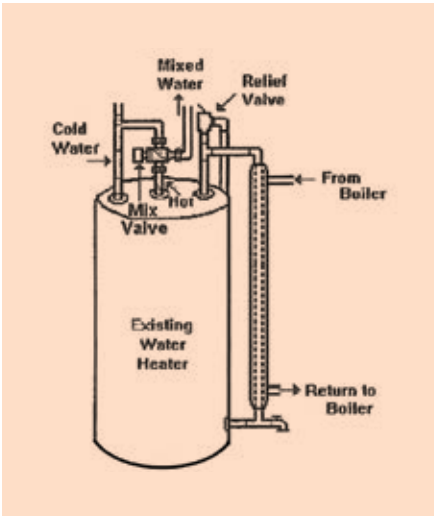
2 SIZES IN STOCK TO CHOOSE FROM!

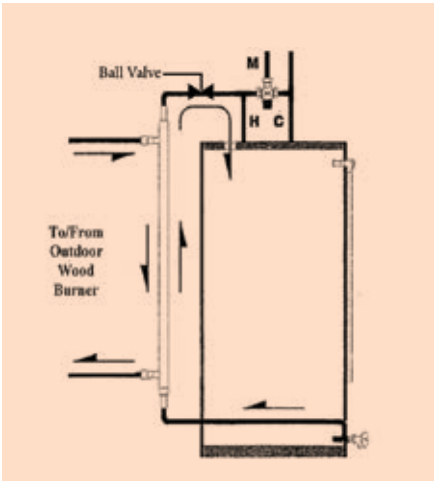
WSD Sidearm Part# DSAWSDSW42	WSD Sidearm Part# DSAWSDSW42-6
A single walled unit	A single walled unit
with 1"connections.	with 1" boiler and 3/4"
This is a cost effective	domestic connections.
unit that gets the job	This is a cost effective
done.	unit that gets the job done.
BTU Output	**BTU Output**
Thermosyphon 8,000	Thermosyphon 7,000
Domestic Pump 12,000	**Domestic Pump 11,000**
@ 2 GPM 180°	**@ 2 GPM 180°**



Assembled in the USA
with foreign and domestic parts







Side-Arm Installation Guide

To ensure proper operation of the side arm, please plumb it as shown in the pictures on the left. The domestic water runs through the inner tube. Heat is transferred from the boiler water that is running through the outer jacket. As the domestic water starts to heat up, it rises, causing it to thermosyphon through the water heater.

If you are removing the factory installed relief valve please re-plumb a relief valve in accordance with the water heater manufacturers instructions and all appropriate state and local codes, for proper installation.

An anti-scald device should be used at the water heater or fixtures to prevent possible injury.

Testing parameters

Boiler side:
8 GPM @ 180 degrees F.

Domestic side:
40 gallon water heater @ 49 F startup.

Perfect to use with:

Outdoor Wood Boilers, Corn Boilers, Pellet Boilers, Gas Boilers & Solar.

WSD DOMESTIC SIDE-ARM WATER TO WATER EXCHANGER



WSD Side-Arm

Part# DSAWSDSW42

- Single Walled Unit
- 1" Sweat Connections
- BTU Output: Thermosyphon 8,000 BTU'S
- Domestic Pump: @ 2 GPM 12,000 BTU'S
- Cost Effective Unit

List Price: $198.56

Assembled in the USA

Letter	Description
A	1-1/2" Pipe Diameter
B	34" in Length
C	1-5/8" to 1-1/8" Female Sweat
D	1-1/8" OD Copper Pipe Sweat
E	40" in Length
F	1-1/8" ID Copper Female Sweat
G	1" in Length
H	32" Centers
I	3" On each End



WSD Side-Arm

Part# DSAWSDSW42-6

- Single Walled Unit
- 1" Female Sweat Boiler Connections
- 3/4" Male Sweat Domestic Connections
- BTU Output: Thermosyphon 7,000 BTU'S
- Domestic Pump: @ 2 GPM 11,000 BTU'S
- Cost Effective Unit

List Price: $186.26

Assembled in the USA

Letter	Description
A	1-1/2" Pipe Diameter
B	34" in Length
C	1-5/8" to 1-1/8" Female Sweat
D	3/4" Copper Pipe Sweat
E	40" in Length
F	1-1/8" Female Sweat
G	1" in Length
H	32" Centers
I	3" On each End

L LINE



BRAZED PLATE

HEAT EXCHANGERS

L-Line Plate-To-Plate Heat Exchangers



Plates and Connections:

- AISI 316L Stainless Steel

Brazing Material:

- Copper, Single Wall Plates.
- Working Pressure up to 481 PSI.
- Working Temperature up to 445˚ F



Not for Steam

CAUTION: NOT FOR USE WITH SWIMMING POOLS!

Made in POLAND

Typical Applications:

- Central Heating
- Hydronic Heating
- Solar and Geothermic Heating
- Industrial Process Heat Recovery
- Condensers and Evaporators in Refrigeration Systems
- Oil Coolers
- Close Approach Fluid - To - Fluid Heat Transfer

To choose a heat exchanger for your specific application, or for help with sizing, please call our office.

SINGLE WALL

Model #:	Dimensions	Connections	LIST PRICE
LA14-10	L. 7.6in W. 3.1in	3/4" MPT	$183.60
LA14-20	L. 7.6in W. 3.1in	3/4" MPT	$220.80
LA14-30	L. 7.6in W. 3.1in	3/4" MPT	$258.00
LA14-40	L. 7.6in W. 3.1in	3/4" MPT	$294.00
LB31-10XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$283.08
LB31-20XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$378.46
LB31-30XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$461.54
LB31-40XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$566.15
LB31-50XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$645.52
LB31-60XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$746.67
LB31-70XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$838.52
LB31-80XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$961.20
LB31-90XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$1,052.40
LB31-100XJ	L. 12.0in W. 5.0in	1" MPT OD 3/4" Solder ID •	$1,144.80
LC110-1-5/8	2"NPT to 1-5/8" Refrigerant Insert for LC 110X2J connections		$22.23 Each
LC110-30X2J	L. 20.9in W. 9.8in	2" MPT	$1,450.80
LC110-40X2J	L. 20.9in W. 9.8in	2" MPT	$1,779.60
LC110-50X2J	L. 20.9in W. 9.8in	2" MPT	$2,112.00
LC110-60X2J	L. 20.9in W. 9.8in	2" MPT	$2,439.60
LC110-70H	L. 20.9in W. 9.8in	2-1/2" MPT	$2,769.60

• These are nominal copper ID's. These will fit standard copper pipe. Many Other Sizes Available as a Special Order.

Please Call For Sizing and Price!

Brazed Plate Heat Exchangers



Advantages of Brazed Plate Heat Exchangers

- high heat transfer coefficient
- small unit size with high heat transfer capacity
- high resistance to pressure and temperature fluctuations
- cost efficiency
- stainless steel connections
- easy installation

Brazed plate heat exchangers consist of stainless steel plate packs, which have embossed chevron patterns. The plates are turned 180° to each other, causing the plate ridges to intersect, and creating a lattice of intersecting channels. The fluids can flow in counter-current or co-current way.

The entire construction is sealed together by the means of brazing in a special vacuum furnace.

Special corrugation patterns promotes high turbulence flow.

Turbulence dramatically improves heat transfer rates and reduces the amount of deposits inside the unit.



Flow Chanel Diagram in Heat Exchanger

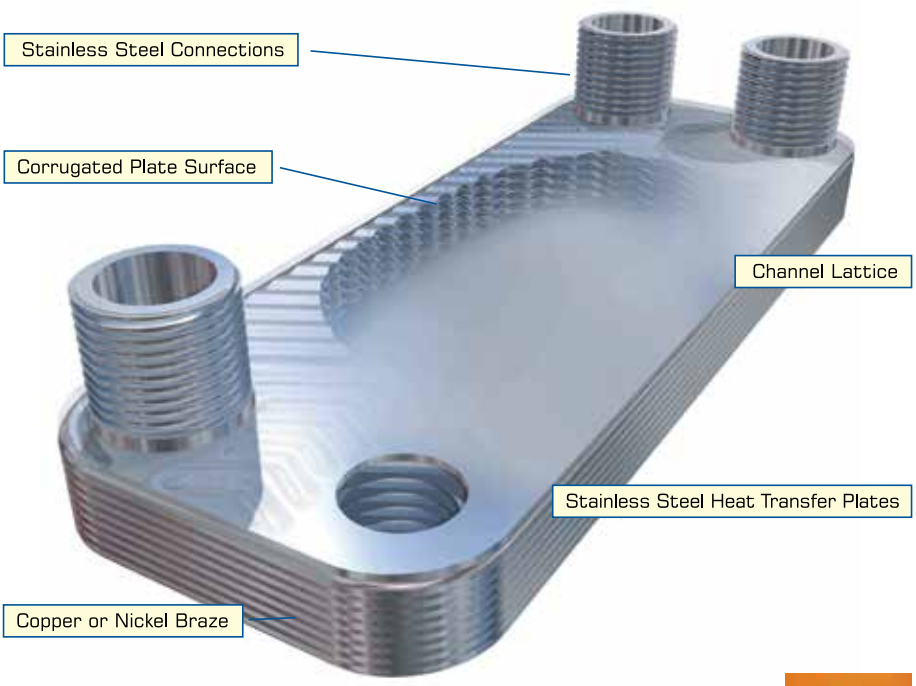


one-pass - channels are parallel.



multi-pass - system of channels is divided into groups which are connected in series.

By changing number of plates, geometry of plates, pattern of plate corrugation and channel diagrams we can custom design heat exchangers for individual needs of the customers.





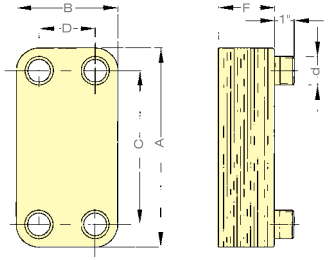




Applications:

- Central Heating
- Hydronic Heating
- Solar and Geothermic Heating
- Industrial Process Heat Recovery
- Condensers and Evaporators in Refrigeration Systems
- Oil Coolers
- Close Approach Fluid-To-Fluid Heat Transfer

LINE



Technical Parameters

Heat Exchanger Type	Dimensions mm (in) A	B	C	D	F	Plate Area m² (sq.ft)	Chanel Volume L (USGPM)	Maximum Flow L/min (GPM)	Maximum Number of Plate	Weight (empty) kg (lb)
LA 14	194 (7.6)	80 (3.1)	154 (6.1)	40 (1.6)	10.0+2.3NP(0.39+0.09NP)	0.012 (0.13)	0.021 (0.005)	110 (29)	80	0.8+0.05NP(1.8+0.10NP)
LA 22	300 (11.8)	79 (3.1)	260 (10.2)	42 (1.7)	9.0+2.3NP(0.36+0.09NP)	0.022 (0.24)	0.034 (0.009)	68 (18)	80	1.1+0.09NP(2.4+0.20NP)
LB 22	183 (7.2)	122 (4.8)	130 (5.1)	68 (2.7)	9.0+2.3NP(0.36+0.09NP)	0.022 (0.24)	0.034 (0.009)	68 (18)	80	1.2+0.09NP(2.6+0.20NP)
LB 31	306 (12.0)	126 (5.0)	250 (9.8)	70 (2.8)	12.4+2.4NP(0.49+0.09NP)	0.032 (0.34)	0.054 (0.014)	290 (77)	150	2.2+0.16NP(4.8+0.35NP)
LB 47	414 (16.3)	122 (4.8)	360 (14.2)	68 (2.7)	9.0+2.3NP(0.36+0.09NP)	0.047 (0.51)	0.072 (0.019)	190 (50)	150	2.1+0.18NP(4.6+0.40NP)
LB 60	506 (19.9)	126 (5.0)	444 (17.5)	64 (2.5)	12.4+2.4NP(0.49+0.09NP)	0.058 (0.62)	0.097 (0.026)	240 (63)	150	3.6+0.25NP(7.9+0.55NP)
LC 110X	530 (20.9)	248 (9.8)	456 (17.9)	174 (6.9)	13.0+2.4NP(0.51+0.09NP)	0.113 (1.22)	0.196 (0.052)	450 (119)	200	7.2+0.52NP(15.8+1.14NP)
LC 110Y	523 (20.6)	241 (9.5)	430 (16.9)	148 (5.8)	13.4+2.8NP(0.53+0.11NP)	0.104 (1.12)	0.216 (0.057)	700 (185)	200	7.2+0.55NP(15.8+1.21NP)
LC 110Z	523 (20.6)	241 (9.5)	430 (16.9)	148 (5.8)	13.4+2.8NP(0.53+0.11NP)	0.104 (1.12)	0.216 (0.057)	900 (238)	200	7.3+0.55NP(15.9+1.21NP)

NP - number of plates

Standard Construction:

- Plates & Connections: AISI 316
- Brazing Material: Copper (Optional - Nickel)
- Single Wall Plates (Optional - Double-Wall)

Design Parameters:

- Working Pressure up to 481 PSI
- Working Temperature up to 445°F

Standard Connections

Heat Exchanger Type	Solder d* (in)	Threaded NPT d (in)
LA 14	7/8"	3/4"
LA 22	7/8"	3/4"
LB 22	1-1/8"	1"
LB 31	1-1/8"	1"
LB 47	1-1/8"	1"
LB 60	1-1/8"	1"
LC 110X	1-5/8"	1-1/2"
LC 110Y	1-5/8"	2 1/2"
LC 110Z	1-5/8"	3"

** inner diameter of connection*



aico ALLIANCE

WWW.WILLOWSRA.COM

NOTES

www.willowsra.com
WSD
WISCONSIN • U.S.A.

L-Line Double Wall Plate-To-Plate Heat Exchangers



Plates and Connections:

- ANSI 316 Stainless Steel

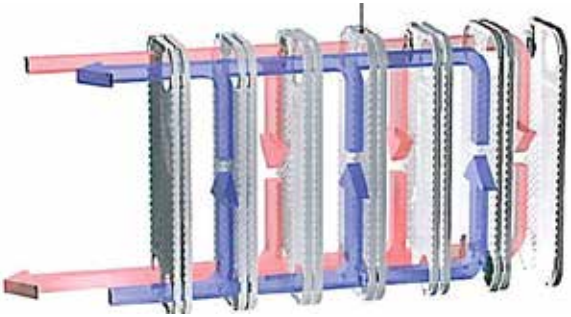
Brazing Material:

- Double Wall Plates.
- Working Pressure up to 481 PSI
- Working Temperature up to 445˚ F

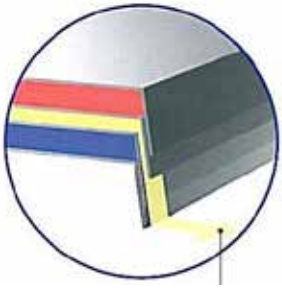
Typical Applications:

- Potable Water Heating
- Domestic Hot Water Heating
- Suitable for any stringent applications and regulations that require double wall, vented heat exchangers.

Not for Steam



Double walls allow leaks to be visually detected without cross contaminating the fluid steams.



Leaks escape into the atmosphere through the airgap between the double walls.

CAUTION: NOT FOR USE WITH SWIMMING POOLS!

Made in POLAND

L-Line Double Wall Plate-To-Plate Heat Exchangers

DOUBLE WALL

Model #:	Dimensions	Connections	LIST PRICE
LA14-10DWR	L. 7.6in W. 3.1in	3/4" MPT	$469.24
LA14-20DWR	L. 7.6in W. 3.1in	3/4" MPT	$614.48
LA14-30DWR	L. 7.6in W. 3.1in	3/4" MPT	$794.48
LA14-40DWR	L. 7.6in W. 3.1in	3/4" MPT	$1,091.17
LB31-10DWR	L. 12.0in W. 5.0in	1" MPT / 3/4" Solder ID •	$707.59
LB31-20DWR	L. 12.0in W. 5.0in	1" MPT / 3/4" Solder ID •	$1,082.40
LB31-30DWR	L. 12.0in W. 5.0in	1" MPT / 3/4" Solder ID •	$1,474.80
LB31-40DWR	L. 12.0in W. 5.0in	1" MPT / 3/4" Solder ID •	$1,977.52
LB31-50DWR	L. 12.0in W. 5.0in	1" MPT / 3/4" Solder ID •	$2,356.80
LB31-60DWR	L. 12.0in W. 5.0in	1" MPT / 3/4" Solder ID •	$2,749.20
LC110-30DWRB	L. 18.2in W. 10in	2-1/2" MPT OD / 2" solder ID •	$3,438.00
LC110-40DWRB	L. 18.2in W. 10in	2-1/2" MPT OD / 2" solder ID •	$4,267.20
LC110-50DWRB	L. 18.2in W. 10in	2-1/2" MPT OD / 2" solder ID •	$5,202.00
LC110-60DWRB	L. 18.2in W. 10in	2-1/2" MPT OD / 2" solder ID •	$6,039.60
LC110X-70DWRB	L. 18.2in W. 10in	2-1/2" MPT OD / 2" solder ID •	$6,973.20
LC110X-80DWRB	L. 18.2in W. 10in	2-1/2" MPT OD / 2" solder ID •	$7,854.00

• These are nominal copper ID's. These will fit standard copper pipe. Many Other Sizes Available as a Special Order.

Please Call For Sizing and Price!

Connection size and style may vary.

LINE DW
AIC ENGINEERING

Double Wall Brazed Plate Heat Exchangers

Special corrugation patterns promote highly turbulent flow. Turbulence dramatically improves heat transfer rates and reduces the amount of deposits inside the unit.

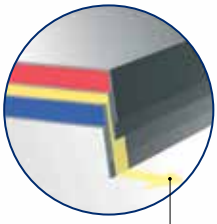


Advantages of AIC Double Wall Brazed Plate Heat Exchangers

- visual leak detection
- prevents fluid cross-contamination
- high thermal efficiency
- compact design
- strong, durable stainless steel construction
- quick and easy installation

The design of the double wall brazed plate heat exchanger prevents cross contamination of fluid streams if there is an internal leak within the unit.

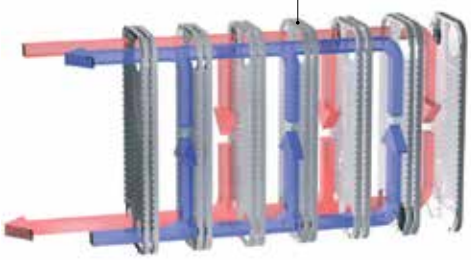
Two stainless steel plate walls separate the fluid streams, with an air gap in between. In the event of a leak, the affected fluid will flow into the air gap and escape out of the heat exchanger, enabling visual detection of the leak.

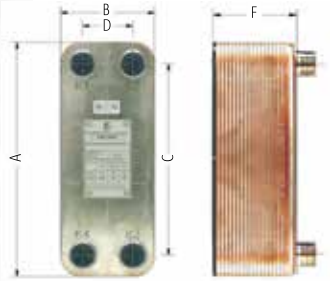


Leaks escape into the atmosphere through the air gap between the double walls.

Flow Channel Diagram in Double Wall Heat Exchanger

Double walls allow leaks to be visually detected without cross contaminating the fluid streams.





Technical Parameters

Model	Dimensions mm (in)					Plate Area	Channel Volume	Maximum Flow	Maximum Number of Plates	Weight (empty)
	A	B	C	D	F	m² (sq.ft)	L (Gal)	L/min (GPM)		kg (lb)
LA14 DW	201 (7.9)	79 (3.1)	165 (6.5)	43 (1.7)	7.62+2.36NP(0.30+0.093NP)	0.014 (0.15)	0.023 (0.006)	75 (20)	50	0.9+0.07NP(2.0+0.15NP)
LB31 DW	287 (11.3)	122 (4.8)	231 (9.1)	69 (2.7)	8.89+2.46NP(0.35+0.097NP)	0.030 (0.33)	0.045 (0.012)	220 (58)	80	1.3+0.14NP(2.9+0.30NP)
LC110 DW	462 (18.2)	254 (10.0)	378 (14.9)	170 (6.7)	12.7+2.03NP(0.50+0.08NP)	0.110 (1.18)	0.163 (0.043)	340 (90)	80	3.6+0.5NP(8.0+1.10NP)

NP - number of plates

Standard Construction

- Double Wall Plates
- Plate Material: ANSI 316
- Brazing Material: Copper

Design Parameters

- Working Temperature up to 445°F
- Working Pressure up to 481 PSI

Standard Connection Sizes

Heat Exchanger Type	Solder (in)*	Thread NPT (in)
LA14 DW	7/8"	3/4"
LB31 DW	1-1/8"	1"
LC110 DW	1-5/8"	1-1/2"

** inner diameter of connection*

AIC brazed plate heat exchangers consist of stainless steel plate packs, which have embossed chevron patterns. The plates are turned 180° to each other, causing the plate ridges to interact, and creating a lattice of intersecting channels. The fluids can flow in either a counter-current or a co-current direction.

The entire construction is sealed together by means of brazing in a special vacuum furnace.



Applications:

- Potable Water Heating
- Domestic Hot Water Heating

Suitable for any stringent applications and regulations that require double wall, vented heat exchangers.

AIC heat exchangers are designed, manufactured, and tested to the strictest codes, and are certified by many national and international inspection authorities.
We are a registered ISO-9001 company and are UL certified.

aic ALLIANCE

High Temp Boiler to Low Temp Radiant Floor Heating

Boiler side water (Supply) 180° F , (Return) 160° F					Radiant Floor Side (Supply) 120° F, (Return) 100° F				
			Pressure Drop PSI – (HP)			Pressure Drop PSI – (HP)			
Model #:	BTU/Hr	Flow GPM	PSI	Feet of Head	Flow GPM	PSI	Feet of Head	Inlet / outlet	Suggested pipe size
LA14-10	25,000	2.57	1	2.3	2.52	1.6	3.7	0.75	0.75
LA14-20	50,000	5.14	1.2	2.8	5.04	1.49	3.4	0.75	1
LA14-20	75,000	7.71	2.53	5.8	7.56	3.16	7.3	0.75	1
LA14-30	100,000	10.28	2.6	6	10.08	2.95	6.8	0.75	1.25
LA14-40	125,000	12.84	3	6.9	12.59	3.24	7.5	0.75	1.25
LB31-010XJ	25,000	2.57	1.03	2.4	2.52	1.72	4	1	1
LB31-020XJ	50,000	5.1	1.05	2.4	5	1.4	3.2	1	1
LB31-020XJ	75,000	7.65	2.2	5.1	7.56	2.9	6.7	1	1
LB31-030XJ	100,000	10.28	1.84	4.3	10.08	2.25	5.2	1	1.25
LB31-040XJ	125,000	12.84	1.72	4	12.59	2.01	4.6	1	1.25
LB31-040XJ	150,000	15.41	2.41	5.6	15.11	2.81	6.5	1	1.5
LB31-050XJ	175,000	17.98	2.26	5.2	17.63	2.57	5.9	1	1.5
LB31-050XJ	200,000	20.55	2.89	6.7	20.15	3.29	7.6	1	1.5
LB31-060XJ	225,000	23.12	2.76	6.4	22.67	3.08	7.1	1	1.5
LB31-060XJ	250,000	25.69	3.36	7.8	25.19	3.74	8.6	1	2
LC110-30X2J	200,000	20.55	1.97	4.55	20.07	1.85	4.27	2	2
LC110-30X2J	250,000	25.69	2.96	6.84	25.19	2.78	6.42	2	2
LC110-30X2J	300,000	30.83	4.13	9.54	30.10	3.88	8.96	2	2
LC110-40X2J	400,000	41.1	4.22	9.75	40.13	4.1	9.47	2	2
LC110-50X2J	500,000	51.38	4.43	10.23	50.17	4.38	10.12	2	2
LC110-60X2J	600,000	61.66	4.73	10.93	60.2	4.73	10.93	2	2
LC110-70H	1,000,000	102.76	3.65	8.43	100.33	3.67	8.48	2.5	3

Condensing Boiler to Radiant Floor Heating

Boiler side water (Supply) 180° F , (Return) 160° F					Radiant Floor Side (Supply) 120° F, (Return) 100° F				
			Pressure Drop PSI – (HP)			Pressure Drop PSI – (HP)			
Model #:	BTU/Hr	Flow GPM	PSI	Feet of Head	Flow GPM	PSI	Feet of Head	Inlet / outlet	Suggested pipe size
LA14-10	25,000	2.53	1.00	2.30	2.52	1.60	3.70	0.75	0.75
LA14-20	50,000	5.07	1.23	2.80	5.04	1.49	3.40	0.75	1.00
LA14-20	75,000	7.60	2.61	6.00	7.56	3.16	7.30	0.75	1.00
LA14-30	100,000	10.14	2.66	6.10	10.08	2.95	6.80	0.75	1.25
LA14-40	125,000	12.67	3.05	7.00	12.59	3.24	7.50	0.75	1.25
LB31-10XJ	25,000	2.53	1.07	2.50	2.52	1.72	4.00	1.00	1.00
LB31-20XJ	50,000	5.04	1.10	2.50	5.04	1.38	3.20	1.00	1.00
LB31-20XJ	75,000	7.60	2.30	5.30	7.56	2.90	6.70	1.00	1.00
LB31-30XJ	100,000	10.14	1.92	4.40	10.08	2.25	5.20	1.00	1.25
LB31-40XJ	125,000	12.67	1.79	4.10	12.59	2.01	4.60	1.00	1.25
LB31-40XJ	150,000	15.20	2.51	5.80	15.20	2.81	6.50	1.00	1.25
LB31-50XJ	175,000	17.74	2.35	5.40	17.63	2.57	5.90	1.00	1.50
LB31-50XJ	200,000	20.27	3.00	6.90	20.15	3.29	7.60	1.00	1.50
LB31-60XJ	225,000	22.81	2.86	6.60	22.67	3.08	7.10	1.00	1.50
LB31-60XJ	250,000	25.34	3.47	8.00	25.19	3.74	8.60	1.00	2.00
LC110-30X2J	200,000	20.27	2.05	4.73	20.07	1.85	4.27	2.00	2.00
LC110-30X2J	250,000	25.34	3.09	7.14	25.08	2.78	6.42	2.00	2.00
LC110-30X2J	300,000	30.41	4.31	9.95	30.10	3.88	8.96	2.00	2.00
LC110-40X2J	400,000	40.54	4.39	10.14	40.13	4.10	9.47	2.00	2.00
LC110-50X2J	500,000	50.68	4.59	10.61	50.17	4.38	10.12	2.00	2.00
LC110-60X2J	600,000	60.81	4.88	11.27	60.20	4.73	10.93	2.00	2.00
LC110-70H	1,000,000	101.36	3.76	8.69	100.33	3.67	8.48	2.50	2.50

LOW Temp to LOW Temp Radiant Floor Heating

Boiler side water (Supply) 120° F , (Return) 100° F					Radiant Floor Side (Supply) 100° F, (Return) 80° F				
			Pressure Drop PSI – (HP)			Pressure Drop PSI – (HP)			
Model #:	BTU/Hr	Flow GPM	PSI	Feet of Head	Flow GPM	PSI	Feet of Head	Inlet / outlet	Suggested pipe size
LA14-10	25,000	2.52	1.64	3.79	2.50	1.10	2.54	0.75	1.00
LA14-20	50,000	5.04	1.49	3.44	5.00	1.29	2.98	0.75	1.25
LA14-30	75,000	7.56	1.72	3.98	7.50	1.60	3.70	0.75	1.25
LA14-40	100,000	10.08	2.12	4.90	10.00	2.04	4.71	0.75	1.25
LB31-10XJ	25,000	2.52	1.55	3.58	2.50	1.03	2.38	1.00	1.00
LB31-20XJ	50,000	5.04	1.25	2.88	5.00	1.05	2.42	1.00	1.25
LB31-20XJ	75,000	7.56	2.61	6.03	7.50	2.20	5.08	1.00	1.25
LB31-30XJ	100,000	10.08	2.03	4.69	10.00	1.84	4.25	1.00	1.50
LB31-40XJ	125,000	12.59	1.83	4.22	12.50	1.72	3.97	1.00	1.50
LB31-50XJ	150,000	15.11	1.77	4.08	15.00	1.70	3.93	1.00	2.00

Radiant Heating (High Temp) Selections

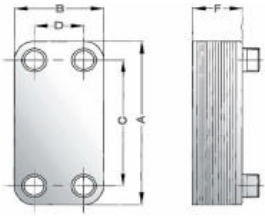
Boiler side water (Supply) 180° F , (Return) 160° F					Radiant Floor Side (Supply) 170° F, (Return) 150° F				
			Pressure Drop PSI – (HP)			Pressure Drop PSI – (HP)			
Model #:	BTU/Hr	Flow GPM	PSI	Feet of Head	Flow GPM	PSI	Feet of Head	Inlet / outlet	Suggested pipe size
LA14-20	25,000	2.57	0.33	0.80	2.56	0.40	0.90	0.75	0.75
LA14-30	50,000	5.14	0.70	1.60	5.12	0.77	1.80	0.75	1.00
LA14-40	75,000	7.71	1.10	2.50	7.68	1.20	2.80	0.75	1.00
LB31-10XJ	25,000	2.57	1.03	2.40	2.56	1.92	4.40	1.00	1.00
LB31-20XJ	50,000	5.14	1.54	3.60	5.12	1.30	3.00	1.00	1.00
LB31-20XJ	75,000	7.71	2.25	5.20	7.68	2.73	6.30	1.00	1.00
LB31-30XJ	100,000	10.28	1.84	4.30	10.24	2.12	4.90	1.00	1.25
LB31-30XJ	125,000	12.84	2.77	6.40	12.80	3.19	7.40	1.00	1.25
LB31-40XJ	150,000	15.41	2.41	5.60	15.36	2.67	6.20	1.00	1.50
LB31-50XJ	175,000	17.98	3.20	7.40	17.92	3.54	8.20	1.00	1.50
LC110-30X2J	200,000	20.55	1.97	4.55	20.33	1.75	4.04	2.00	2.00
LC110-30X2J	300,000	30.83	4.13	9.54	30.50	3.67	8.48	2.00	2.00
LC110-40X2J	400,000	41.10	4.22	9.75	40.66	3.89	8.99	2.00	2.00
LC110-50X2J	500,000	51.38	4.43	10.23	50.83	4.18	9.65	2.00	2.00
LC110-60X2J	600,000	61.66	4.73	10.93	60.99	4.53	10.47	2.00	2.00
LC110-70H	750,000	77.07	2.13	4.92	76.24	2.06	4.76	2.00	2.00

Snow Melt Selections

Boiler side water (Supply) 180° F , (Return) 160° F					Radiant Floor Side (Supply) 120° F, (Return) 100° F				
			Pressure Drop PSI – (HP)			Pressure Drop PSI – (HP)			
Model #:	BTU/Hr	Flow GPM	PSI	Feet of Head	Flow GPM	PSI	Feet of Head	Inlet / outlet	Suggested pipe size
LA14-10	25,000	2.57	1.00	2.30	2.79	2.60	6.00	0.75	0.75
LA14-20	50,000	5.14	1.19	2.70	5.58	2.29	5.30	0.75	1.00
LA14-30	75,000	7.71	1.51	3.50	8.36	2.55	5.90	0.75	1.00
LA14-40	100,000	10.28	1.96	4.50	11.15	3.04	7.00	0.75	1.25
LB31-10XJ	25,000	2.57	1.03	2.40	2.79	2.73	6.30	1.00	1.00
LB31-20XJ	50,000	5.14	1.05	2.40	5.58	2.19	5.10	1.00	1.00
LB31-30XJ	75,000	7.71	1.09	2.50	8.36	2.09	4.80	1.00	1.00
LB31-40XJ	100,000	10.28	1.14	2.60	11.15	2.09	4.80	1.00	1.25
LB31-40XJ	125,000	12.84	1.72	4.00	13.94	3.14	7.30	1.00	1.25
LB31-50XJ	150,000	15.41	1.70	3.90	16.73	2.98	6.90	1.00	1.25
LB31-50XJ	175,000	17.98	2.26	5.20	19.52	3.96	9.10	1.00	1.50
LB31-60XJ	200,000	20.55	2.22	5.10	22.30	3.77	8.70	1.00	1.50
LC110-30X2J	200,000	20.55	1.97	4.54	20.07	1.85	4.26	2.00	2.50
LC110-30X2J	300,000	30.83	4.13	9.54	30.10	3.88	8.97	2.00	2.50
LC110-40X2J	400,000	41.10	4.22	9.74	40.13	4.10	9.50	2.00	2.50
LC110-50X2J	500,000	51.38	4.43	10.23	50.17	4.38	10.12	2.00	2.50
LC110-60X2J	600,000	61.66	4.73	10.92	60.20	4.73	10.92	2.00	2.50

Domestic Heating (High Temp) Selections Double Wall

Boiler side water (Supply) 180° F , (Return) 160° F					Radiant Floor Side (Supply) 50° F, (Return) 120° F				
			Pressure Drop PSI – (HP)			Pressure Drop PSI – (HP)			
Model #:	BTU/Hr	Flow GPM	PSI	Feet of Head	Flow GPM	PSI	Feet of Head	Inlet / outlet	Suggested pipe size
LA14-10DWR	25	2.57	1.53	3.53	0.71	0.11	0.25	0.75	1.00
LA14-20DWR	50,000	5.14	1.41	3.26	1.43	0.13	0.30	0.75	1.00
LA14-20DWR	75,000	7.71	2.99	6.91	2.14	0.27	0.63	0.75	1.00
LB31-20DWR	75,000	7.71	2.11	4.88	2.14	0.20	0.46	1.00	1.00
LB31-20DWR	100,000	10.28	3.56	8.22	2.85	0.33	0.77	1.00	1.00
LB31-30DWR	150,000	15.41	3.58	8.27	4.28	0.35	0.81	1.00	1.25
LB31-40DWR	200,000	20.55	2.78	6.43	5.71	0.27	0.63	1.00	1.25
LC110-30DWR	300,000	30.83	2.87	6.63	8.56	0.29	0.67	2.50	2.50
LC110-30DWR	400,000	41.10	4.84	11.18	11.42	0.49	1.13	2.50	2.50
LC110-40DWR	500,000	51.38	4.18	9.66	14.27	0.43	0.99	2.50	2.50
LC110-50DWR	750,000	77.07	4.10	9.45	21.41	0.44	0.95	2.50	2.50





LINE

Refrigerant Fluid: R410A
Water in Secondary Circuit

EVAPORATOR

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31ES-10XJ	1	12,000
LB31ES-20XJ	2	24,000
LB60ES-20X5J	3	36,000
LB60ES-30X5J	5	60,000
LB60ES-50X5J	7.5	90,000
LC110ES-20X2J	10	120,000
LC110ES-30X2J	12.5	150,000
LC110ES-30X2J	15	180,000
LC110ES-50VX2J	20	240,000
LC110ES-60VX2J	25	300,000
LC110ES-70VX2J	30	360,000
LC110ES-110VX2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60ES-20x20-DCX5J	3+3	72,000
LB60ES-30x30-DCX5J	5+5	120,000
LB60ES-50x50-DCX5J	7.5+7.5	180,000
LC110ES-20x20-DCX2J	10+10	240,000
LC110ES-30x30-DCX2J	12.5+12.5	300,000
LC110ES-40x40-DCVX2J	15+15	360,000
LC110ES-50x50-DCVX2J	20+20	480,000

CONDENSER

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31ES-10XJ	1	12,000
LB31ES-20XJ	2	24,000
LB60ES-20X5J	3	36,000
LB60ES-30X5J	5	60,000
LB60ES-40X5J	7.5	90,000
LC110ES-20X2J	10	120,000
LC110ES-30X2J	12.5	150,000
LC110ES-40X2J	15	180,000
LC110ES-50X2J	20	240,000
LC110ES-60X2J	25	300,000
LC110ES-70X2J	30	360,000
LC110ES-100X2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60ES-20x20-DCX5J	3+3	72,000
LB60ES-30x30-DCX5J	5+5	120,000
LB60ES-40x40-DCX5J	7.5+7.5	180,000
LC110ES-20x20-DCX2J	10+10	240,000
LC110ES-30x30-DCX2J	12.5+12.5	300,000
LC110ES-30x30-DCX2J	15+15	360,000
LC110ES-40x40-DCX2J	20+20	480,000

* VX.. models available with distributor

Heat Exchanger Type	Dimensions (in)					Dual Connections	
	A	B	C	D	F	NPT	Solder
LB31ES-XJ	12.0	5.0	9.8	2.8	0.47+0.09NP	1"	7/8"
LB60ES-X5J	20.0	5.0	17.5	2.5	0.60+0.09NP	1-1/2"	1-3/8"
LC110ES-X2J	20.9	9.8	17.9	6.9	0.57+0.09NP	2"	2"

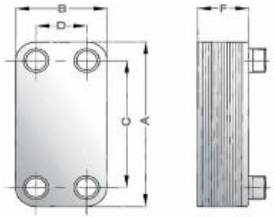
NP = number of plates
Different Connection Options may be available from stock at time of order. Please consult AIC.

Standard Construction:
Heating Plates: AISI 316
Brazing Material: Copper (Optional-Nickel)
Single Wall Plates (Optional-Double Wall)

Design Parameters:
Working Pressure up to 650 PSI
Working Temperature up to 302° F
'ES' Models Required for high pressures

Standard Products are UL Listed
(ASME option- contact AIC for details)

WWW.WILLOWSRA.COM





LINE

Refrigerant Fluid: R22
Water in Secondary Circuit

EVAPORATOR

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31-20XJ	1	12,000
LB31-30XJ	2	24,000
LB60-20X5J	3	36,000
LB60-30X5J	5	60,000
LB60-40X5J	7.5	90,000
LB60-60VX5J	10	120,000
LC110-40VX2J	12.5	150,000
LC110-50VX2J	15	180,000
LC110-60VX2J	20	240,000
LC110-80VX2J	25	300,000
LC110-100VX2J	30	360,000
LC110-130VX2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60-20x20-DCX5J	3+3	72,000
LB60-30x30-DCX5J	5+5	120,000
LB60-40x40-DCX5J	7.5+7.5	180,000
LC110-30x30-DCX2J	10+10	240,000
LC110-40x40-DCVX2J	12.5+12.5	300,000
LC110-50x50-DCVX2J	15+15	360,000
LC110-60x60-DCVX2J	20+20	480,000

CONDENSER

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31-20XJ	1	12,000
LB31-30XJ	2	24,000
LB60-20X5J	3	36,000
LB60-30X5J	5	60,000
LB60-40X5J	7.5	90,000
LB60-60X5J	10	120,000
LC110-40X2J	12.5	150,000
LC110-50X2J	15	180,000
LC110-60X2J	20	240,000
LC110-80X2J	25	300,000
LC110-100X2J	30	360,000
LC110-130X2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60-20x20-DCX5J	3+3	72,000
LB60-30x30-DCX5J	5+5	120,000
LB60-40x40-DCX5J	7.5+7.5	180,000
LC110-30x30-DCX2J	10+10	240,000
LC110-40x40-DCX2J	12.5+12.5	300,000
LC110-50x50-DCX2J	15+15	360,000
LC110-60x60-DCX2J	20+20	480,000

* VX... models available with distributor

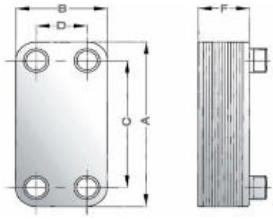
Heat Exchanger Type	Dimensions (in)					Dual Connections	
	A	B	C	D	F	NPT	Solder
LB31-XJ	12.0	5.0	9.8	2.8	0.39+0.09NP	1"	7/8"
LB60-X5J	20.0	5.0	17.5	2.5	0.39+0.09NP	1-1/2"	1-3/8"
LC110-X2J	20.9	9.8	17.9	6.9	0.45+0.09NP	2"	2"

NP = number of plates
Different Connection Options may be available from stock at time of order. Please consult AIC.

Standard Construction:
Heating Plates: AISI 316
Brazing Material: Copper (Optional-Nickel)
Single Wall Plates (Optional-Double Wall)

Design Parameters:
Working Pressure up to 435 PSI
Working Temperature up to 302° F

Standard Products are UL Listed
(ASME option- contact AIC for details)





LINE

Refrigerant Fluid: R134A
Water in Secondary Circuit

EVAPORATOR

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31-20XJ	1	12,000
LB31-30XJ	2	24,000
LB60-20X5J	3	36,000
LB60-30X5J	5	60,000
LB60-50X5J	7.5	90,000
LC110-30X2J	10	120,000
LC110-40VX2J	12.5	150,000
LC110-50VX2J	15	180,000
LC110-70VX2J	20	240,000
LC110-90VX2J	25	300,000
LC110-110VX2J	30	360,000
LC110-180VX2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60-20x20-DCX5J	3+3	72,000
LB60-40x40-DCX5J	5+5	120,000
LB60-50x50-DCX5J	7.5+7.5	180,000
LC110-30x30-DCX2J	10+10	240,000
LC110-40x40-DCVX2J	12.5+12.5	300,000
LC110-50x50-DCVX2J	15+15	360,000
LC110-70x70-DCVX2J	20+20	480,000

CONDENSER

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31-20XJ	1	12,000
LB31-30XJ	2	24,000
LB60-20X5J	3	36,000
LB60-30X5J	5	60,000
LB60-40X5J	7.5	90,000
LC110-20X2J	10	120,000
LC110-30X2J	12.5	150,000
LC110-40X2J	15	180,000
LC110-50X2J	20	240,000
LC110-60X2J	25	300,000
LC110-70X2J	30	360,000
LC110-100X2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60-20x20-DCX5J	3+3	72,000
LB60-30x30-DCX5J	5+5	120,000
LB60-40x40-DCX5J	7.5+7.5	180,000
LC110-20x20-DCX2J	10+10	240,000
LC110-30x30-DCX2J	12.5+12.5	300,000
LC110-30x30-DCX2J	15+15	360,000
LC110-40x40-DCX2J	20+20	480,000

* VX... models available with distributor

Heat Exchanger Type	Dimensions (in)					Dual Connections	
	A	B	C	D	F	NPT	Solder
LB31-XJ	12.0	5.0	9.8	2.8	0.39+0.09NP	1"	7/8"
LB60-X5J	20.0	5.0	17.5	2.5	0.39+0.09NP	1-1/2"	1-3/8"
LC110-X2J	20.9	9.8	17.9	6.9	0.45+0.09NP	2"	2"

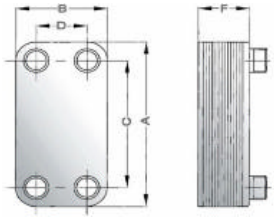
NP = number of plates
Different Connection Options may be available from stock at time of order. Please consult AIC.

Standard Construction:
Heating Plates: AISI 316
Brazing Material: Copper (Optional-Nickel)
Single Wall Plates (Optional-Double Wall)

Design Parameters:
Working Pressure up to 435 PSI
Working Temperature up to 302° F

Standard Products are UL Listed
(ASME option- contact AIC for details)

WWW.WILLOWSRA.COM





LINE

Refrigerant Fluid: R407C
Water in Secondary Circuit

EVAPORATOR

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31-10XJ	1	12,000
LB31-20XJ	2	24,000
LB60-20X5J	3	36,000
LB60-30X5J	5	60,000
LB60-40X5J	7.5	90,000
LC110-20X2J	10	120,000
LC110-30X2J	12.5	150,000
LC110-40VX2J	15	180,000
LC110-50VX2J	20	240,000
LC110-60VX2J	25	300,000
LC110-70VX2J	30	360,000
LC110-110VX2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60-20x20-DCX5J	3+3	72,000
LB60-30x30-DCX5J	5+5	120,000
LB60-40x40-DCX5J	7.5+7.5	180,000
LC110-20x20-DCX2J	10+10	240,000
LC110-30x30-DCX2J	12.5+12.5	300,000
LC110-40x40-DCVX2J	15+15	360,000
LC110-50x50-DCVX2J	20+20	480,000

CONDENSER

SINGLE CIRCUIT

MODEL	RT	BTU/H
LB31-20XJ	1	12,000
LB31-40XJ	2	24,000
LB60-30X5J	3	36,000
LB60-40X5J	5	60,000
LC110-40X2J	7.5	90,000
LC110-50X2J	10	120,000
LC110-60X2J	12.5	150,000
LC110-70X2J	15	180,000
LC110-90X2J	20	240,000
LC110-110X2J	25	300,000
LC110-130X2J	30	360,000
LC110-180X2J	40	480,000

DUAL CIRCUIT

MODEL	RT	BTU/H
LB60-30x30-DCX5J	3+3	72,000
LB60-50x50-DCX5J	5+5	120,000
LC110-40x40-DCX2J	7.5+7.5	180,000
LC110-40x40-DCX2J	10+10	240,000
LC110-60x60-DCX2J	12.5+12.5	300,000
LC110-70x70-DCX2J	15+15	360,000
LC110-90x90-DCX2J	20+20	480,000

* VX... models available with distributor

Heat Exchanger Type	Dimensions (in)					Dual Connections	
	A	B	C	D	F	NPT	Solder
LB31-XJ	12.0	5.0	9.8	2.8	0.39+0.09NP	1"	7/8"
LB60-X5J	20.0	5.0	17.5	2.5	0.39+0.09NP	1-1/2"	1-3/8"
LC110-X2J	20.9	9.8	17.9	6.9	0.45+0.09NP	2"	2"

NP = number of plates
Different Connection Options may be available from stock at time of order. Please consult AIC.

Standard Construction:
Heating Plates: AISI 316
Brazing Material: Copper (Optional-Nickel)
Single Wall Plates (Optional-Double Wall)

Design Parameters:
Working Pressure up to 435 PSI
Working Temperature up to 302° F

Standard Products are UL Listed
(ASME option- contact AIC for details)

B-Line Shell & Tube Heat Exchangers



B-Line Shell and Tube Exchangers:
Designed to perform at high velocities with low pressure drops. Made of high quality, AISI 316L stainless steel to ensure superior corrosion resistance and longer product life. The self-cleansing feature is one less thing to worry about.

WARNING: NOT FOR USE IN SALT WATER APPLICATIONS!
Please See the NiCrome 24 M-Lines on for use with salt water pools.

Made in POLAND

Typical Residential Applications:

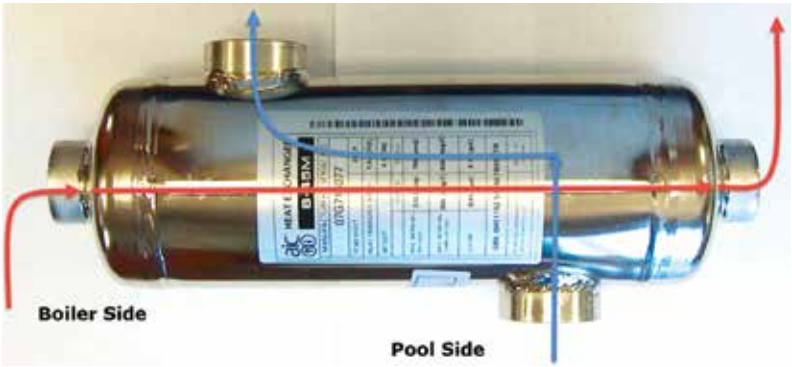
- Swimming Pools, Spas, Hot Tubs with standard chlorine count of 1-3 ppm. Higher chlorine levels please look to the M series or the AM/AP series

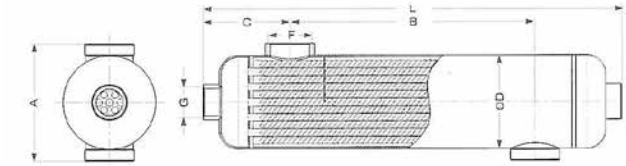
Typical Industrial Applications:

- Oil Coolers
- Transmission and Engine Coolers
- Boiler Sample Coolers
- Waste Water Heat Recovery

To choose a heat exchanger for your specific application, or for help with sizing, please call our office.

Model #:	Estimated Gallons	Heat Transfer Area	LIST PRICE
B-45	3,000	1.97 SQ.FT	$642.11
B-70	6,000	2.79 SQ.FT	$665.57
B-130	11,000	3.30 SQ.FT	$708.20
B-180	16,000	4.91 SQ.FT	$946.67
B-250	22,000	7.29 SQ.FT	$1,110.71
B-300	27,000	9.38 SQ.FT	$1,396.83
B-500	44,000	17.32 SQ.FT	$1,888.89
B-1000	88,000	23.86 SQ.FT	$2,694.27





Model	A	L	F	G
B-45	4.17"	10.51"	1"	3/4"
B-70	4.17"	13.58"	1-1/2"	3/4"
B-130	4.17"	15.55"	1-1/2"	3/4"
B-180	5.04"	15.08"	1-1/2"	1"
B-250	5.04"	20.20"	1-1/2"	1"
B-300	5.04"	24.88"	1-1/2"	1"
B-500	5.04"	42.72"	2"	1"
B-1000	6.57"	36.10"	2"	2"

Proper sizing based on actual system requirements and parameters is STRONGLY encouraged.

b series

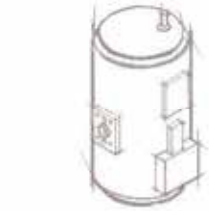
HEAT EXCHANGERS

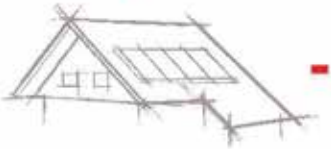


be SERIES

WWW.WILLOWSRA.COM

- In-floor heating
- swimming pools, spas, hot tubs
- driveway snowmelts













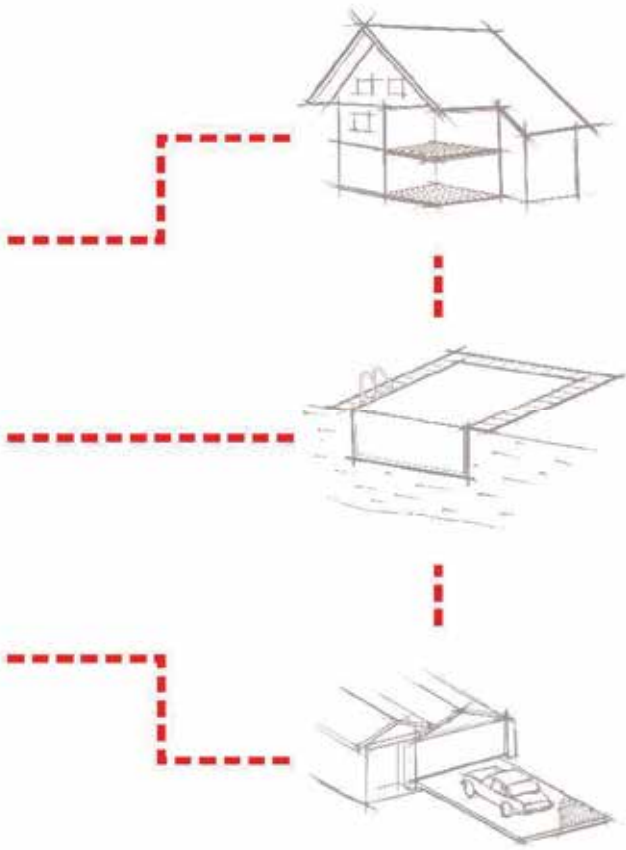




Typical industrial applications

- oil coolers
- transmission and engine coolers
- boiler sample coolers
- waste water heat recovery

be SERIES



Choosing the right B Series Heat Exchanger

Selection of the correct heat exchanger will guarantee you performance at the right price.

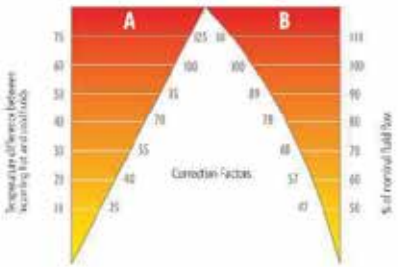
Your Benefits

- Designed to perform at high fluid velocities with low pressure drops
- Made entirely of high quality, specially treated AISI 316L stainless steel to ensure superior corrosion resistance and longer product life
- Induced self-cleansing feature - one less thing to worry about

Table 1 Fluid Correction Factors

Fluid	Fx10²
Water	1.00
Ethylene Glycol 30%	0.92
Ethylene Glycol 50%	0.85
Propylene Glycol 30%	0.94
Propylene Glycol 50%	0.89
Oil SAE10	0.50
Hydraulic Oil ISO VG22	0.45

Chart1 Temperature (°C) and Flow Rate Correction Factors



Step 1

Record incoming temperatures and fluid flows

Example: (based on performance of **B 180**)
Temp. of incoming boiler water = 60°C (140°F)
Temp. of incoming pool water = 10°C (50°F)
Flow of boiler water = 26.5 l/min (7 USGPM)
Flow of pool water = 189 l/min (50 USGPM)

Step 2

Calculate

Calculate temp. difference between incoming fluids: 60°C - 10°C = 50°C
From Table 2 Calculate percentage of nominal hot water flow: 26.5/30 x 100% = 88.3%
From Table 2 Calculate percentage of nominal cold water flow: 189/210 x 100% = 90%
From Table 2 Obtain nominal capacity of heat exchanger (e.g. B-180 = 53kW)

Step 3

Read correction factors

Read correction values from chart 1
A=85 for temperature difference 50°C
B_{hot}=87 for 88.3% of hot flow
B_{cold}=89 for 90% cold flow
From fluid correction table (Table 1) for water both hot and cold fluids are Fhot = Fcold = 1.00×10^{-2}

Step 4

Solution

$$Corrected\ Thermal\ Output = Nominal Capacity \times A \times F_{hot} \times F_{cold} \times \sqrt{B_{hot} \times B_{cold}}$$

$$Corrected\ Thermal\ Output = 53 \times 85 \times 0{,}01 \times 0{,}01 \times \sqrt{87 \times 89} = 39{,}6\ kW\ (135{,}115\ BTU/h)$$

Notes: °C = (°F - 32) x 5/9, 1 USGPM = 3.78 l/min

Table 2 Nominal Values

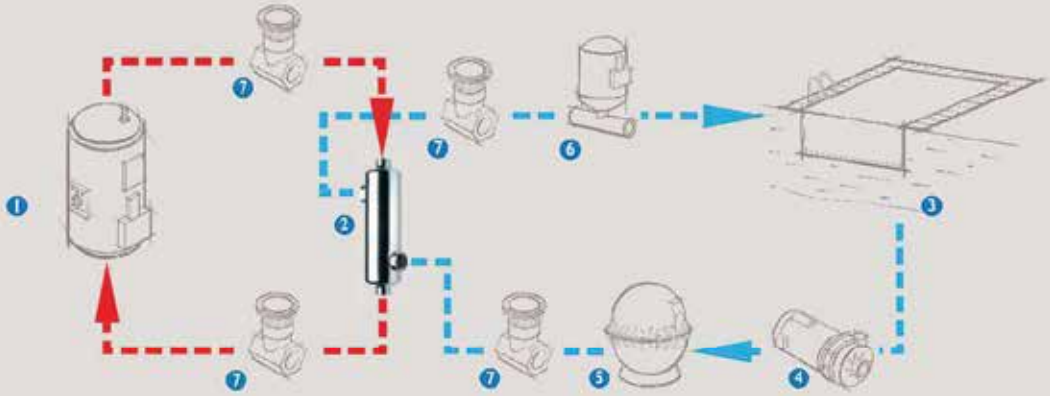
Nominal values are based on 60°C (140°F) temperature between incoming heating and heated water

Model	Nominal Capacity	Hot Water Flow		Cold Water Flow	
	kW	l/min	(USGPM)	l/min	(USGPM)
B 45	13	23	(6.08)	150	(39.63)
B 70	20	25	(6.60)	170	(44.91)
B 130	38	27	(7.13)	200	(52.83)
B 180	53	30	(7.93)	210	(55.48)
B 250	73	35	(9.25)	270	(71.33)
B 300	88	40	(10.57)	300	(79.25)
B 400	117	46	(12.42)	342	(90.10)
B 500	146	55	(14.53)	360	(95.10)
B 1000	293	95	(25.10)	705	(185.24)

Table 3 Quick Sizing Reference

Model	Pool Capacity	
	m³	USGAL
B 45	12	3.000
B 70	24	6.000
B 130	40	11.000
B 180	60	16.000
B 250	80	22.000
B 300	100	27.000
B 400	130	34.000
B 500	170	44.000
B 1000	330	88.000

Figure2 Typical swimming pool installation



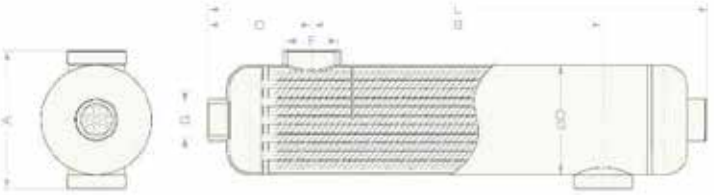
1 Boiler 2 Heat exchanger 3 Swimming Pool 4 Pump 5 Filter 6 Chlorine Feeder 7 Gate Valve

Engineering Data

Table 4 Heat Exchanger Nominal Performance

Heat Exchanger Type	Nominal Capacity		Hot Water				Cold Water			
			Flow		Pressure drop		Flow		Pressure drop	
	kW	Btu/hr	l/min	USGPM	kPa	psig	l/min	USGPM	kPa	psig
B 45	13	45.000	23	6.08	6.2	0.90	150	39.63	7.4	1.07
B 70	20	70.000	25	6.60	7.5	1.09	170	44.91	9.2	1.33
B 130	38	130.000	27	7.13	8.1	1.17	200	52.83	11.4	1.65
B 180	53	180.000	30	7.93	2.7	0.40	210	55.48	7.5	1.10
B 250	73	250.000	35	9.25	4.2	0.60	270	71.33	12.0	1.70
B 300	88	300.000	40	10.57	6.4	0.90	300	79.25	17.0	2.50
B 400	117	400.000	46	12.42	7.8	1.13	342	90.10	20.0	2.90
B 500	146	500.000	55	14.53	9.2	1.30	360	95.10	22.0	3.20
B 1000	293	1.000.000	95	25.10	16.2	2.35	705	185.24	29.1	4.22

Nominal values are based on 60°C (140°F) temperature difference between incoming heating and heated water



Standard Materials:

316 L Stainless Steel,
Titanium

Maximum Allowable Working Pressure:

SS 316 L 1.03 MPa (150 psig)
Titanium 1.03MPa (150 psig)

Maximum Allowable Working Temperature:

SS 316 L 208°C (406°F)
Titanium 190°C (375°F)

Table 5 Advanced B Series Stainless Steel - 316L

Type	L	A	B	C	D	F	G	Heat Transfer Area
	mm (in)							m²(sq.ft.)
B 45	267 (10.51)	105 (4.17)	111.5 (4.39)	77.5 (3.05)	80 (3.15)	1"	3/4"	0.183 (1.97)
B 70	345 (13.58)		175 (6.89)	85 (3.35)		1-1/2"		0.259 (2.79)
B 130	395 (15.55)		225 (8.86)					0.307 (3.30)
B 180	383 (15.08)	128 (5.04)	193 (7.60)	95 (3.74)	101.6 (4.0)		1"	0.465 (4.91)
B 250	513 (20.20)		323 (12.72)					0.677 (7.29)
B 300	632 (24.88)		442 (17.40)					0.871 (9.38)
B 400	747 (29.41)		557 (21.93)					1.058 (11.39)
B 500	1085 (42.72)		884 (34.80)	100.5 (3.96)		2"	2"	1.609 (17.32)
B 1000	917 (36.10)	167 (6.57)	676.5 (26.63)	120 (4.72)	139.7 (5.5)			2.200 (23.68)

Table 6 Advanced B Series Titanium

Type	L	A	B	C	D	F	G	Heat Transfer Area
	mm (in)							m²(sq.ft.)
B 45	267 (10.51)	115 (4.53)	101.5 (3.97)	83 (3.27)	88.9 (3.5)	1"	3/4"	0.171 (1.84)
B 70	345 (13.58)		164 (6.46)	90.5 (3.56)		1-1/2"		0.247 (2.66)
B 130	395 (15.55)		214 (8.43)					0.295 (3.18)
B 180	383 (15.08)	141 (5.55)	196 (7.72)	93.5 (3.68)	114.3 (4.5)		1"	0.465 (4.91)
B 250	513 (20.20)		326 (12.83)					0.677 (7.29)
B 300	632 (24.88)		445 (17.52)					0.871 (9.38)
B 400	747 (29.41)		560 (22.05)					1.058 (11.39)
B 500	1085 (42.72)		887 (34.92)	99 (3.90)		2"	2"	1.609 (17.32)
B 1000	912 (35.91)	167 (6.57)	676.5 (26.63)	117 (4.6)	139.7 (5.5)			2.160 (23.25)

Our stringent quality processes and management systems are certified to the requirements of **ISO9001.**

AIC standard B-series heat exchangers are designed, tested, and manufactured according to ASME B31.3 code.Our factory and broad selection of heat transfer products are certified by many national and international technical inspection authorities: Canadian CRN, UL, ASME, PED (97/23/EC).
We can also work closely with our clients to design products to meet their exact criteria.

WWW.WILLOWSRA.COM



be>
SERIES

We are pleased to introduce our new revolutionary line of B Heat Exchangers.

Thanks to our patented helically corrugated tube design, the B Series Heat Exchangers can deliver excellent thermal performance even with fouled heating media.

Performance you desire

Quality you deserve

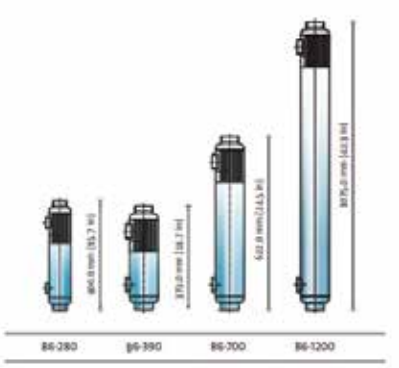
B6-Line High Efficiency Shell & Tube Heat Exchangers



B-Line Shell and Tube Exchangers:

Designed to perform at high velocities with low pressure drops. Made of high quality, AISI 316L stainless steel to ensure superior corrosion resistance and longer product life. Induced self-cleansing feature one less thing to worry about. The B6-Line are a High efficiency pool HX they are a different flow compared to the B-line and thus allow for more flow and better heat transfer. Works very good with low temp systems.

WARNING: NOT FOR USE IN SALT WATER APPLICATIONS!
Please See the NiCrome 24 M-Lines on for use with salt water pools.



Typical Residential Applications:

- Swimming Pools, Spas, Hot Tubs with standard chlorine count of 1-3 ppm. Higher chlorine levels please look to the M series or the AM/AP series

Typical Industrial Applications:

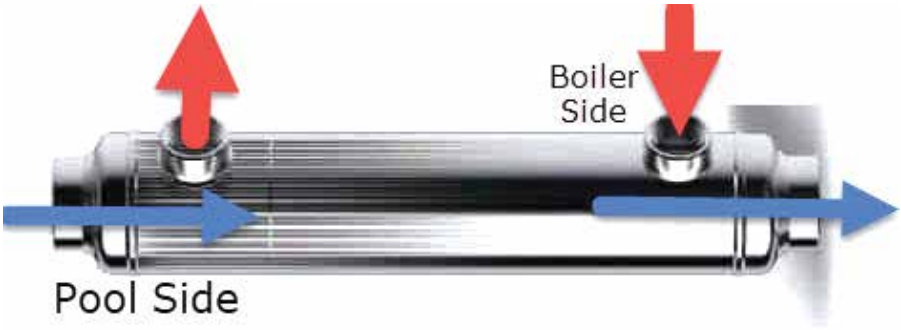
- Oil Coolers
- Transmission and Engine Coolers
- Boiler Sample Coolers
- Waste Water Heat Recovery

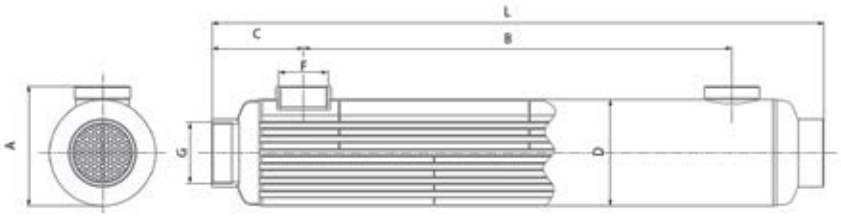
Made in POLAND

To choose a heat exchanger for your specific application, or for help with sizing, please call our office.

Model #:	Estimated Gallons	Heat Transfer Area	LIST PRICE
B6-280	25,000	5.10 sq.ft	$1,036.10
B6-390	33,000	6.50 sq.ft	$1,418.30
B6-700	62,000	12.40 sq.ft	$1,912.30
B6-1200	105,000	23.00 sq.ft	$2,723.50

aic





Model	A	L	F	G
B6-280	3.7"	15.7"	1"	1.5"
B6-390	4.6"	14.7"	1-1/2"	2"
B6-700	4.6"	24.5"	1-1/2"	2"
B6-1200	4.6"	42.3"	1-1/2"	2"

Proper sizing based on actual system requirements and parameters is STRONGLY encouraged.

M-Line Marine Alloy Heat Exchangers

FOR USE IN SALT WATER APPLICATIONS!



Made in POLAND

Part #	Nominal Capacity		Hot Water		Cold Water		List PRICE
	KW	BTU/HR	PSIG	USGPM	PSIG	USGPM	
M-180	53	180,000	0.4	7.93	1.1	55.48	$2,430.22
M-300	88	300,000	0.9	10.57	2.5	79.25	$3,224.89
M-500	146	500,000	1.3	14.53	3.2	95.1	$4,513.78

Nominal Values are based on 60*C (140*F) temperature difference between incoming heated and heating water.

M- LINE

MARINE ALLOY HEAT EXCHANGERS

INNOVATIVE PRODUCT SOLUTIONS

The AIC M-Line is a line of complete welded, shell and tube heat exchangers made entirely of NICROM-24, a super austenitic marine alloy. Its compact structure is an integration of innovative material with detailed engineering for effective use with high fluid velocities and low pressure drops, designed specifically for the salt water pool market.

The versatility of this robust straight tube design covers a comprehensive range of capacities, suitable for all residential and commercial applications.

NICROM-24

NICROM-24 is a super austenitic alloy that for the past two decades has been tested and used in marine environments around the world.

A low carbon, high purity, nitrogen-bearing alloy, it was originally engineered to be a seawater resistant material, but has since proven to be resilient in a wide range of corrosive environments.

MODELS	HTA	Overall Length	Shell OD	Connections	
	(ft^2)	(in)	(in)	Tubeside	Shellside
M-180	4.7	15.3	4.1	1" NPT	1.5" NPT
M-300	9.0	25.1	4.1	1" NPT	1.5" NPT
M-500	16.8	42.9	4.1	1" NPT	1.5" NPT

DESIGN PRESSURE: 150 PSI DESIGN TEMPERATURE: 406 °F
MATERIAL OF CONSTRUCTION: NICROM-24

NICROM-24

SUPER AUSTENITIC MARINE ALLOY

SEAWATER ENVIRONMENT

Seawater environments are very corrosive due to their high concentration of chloride salts, dissolved oxygen, and carbon dioxide. In stagnant or polluted conditions, additional corrosive elements such as ammonia or sulfide ions are present. Such environments are damaging to the structural integrity of traditional copper-based alloys, and enhance the potential for localized pitting, crevice corrosion and chloride stress-corrosion cracking (SCC) in stainless materials.

NICROM-24 CORROSION RESISTANCE

Elevated levels of chromium, molybdenum, and the addition of nitrogen enhance the strength and resistance of NICROM-24 to chloride pitting, crevice corrosion, and SCC, making it the ideal material for use in such environments. Its chemical composition enables it to perform at levels only previously achieved by materials such as titanium.

Consistently, NICROM-24 has demonstrated its superior performance and strength over other commercially marketed 'marine alloys', such as 90/10 CuNi and 254SMo®, and is highly valued for use in the fabrication of seawater and salt water heat exchangers.

Material	PREn	Crevice Corrosion in Seawater (% of Sites Attacked)
254SMo®	46.8	6
NICROM-24	47.7	0

Pitting Resistance Equivalent number (PREn) of an alloy can be correlated to its chemical composition of chromium, molybdenum, and nitrogen, in terms of weight percentage.

Material	Corrosion [1] (avg. mils/year)	Erosion Corrosion Rate [2] (avg. mils/year)
90/10 CuNi	20.84	25.00
NICROM-24	0.00	1.00

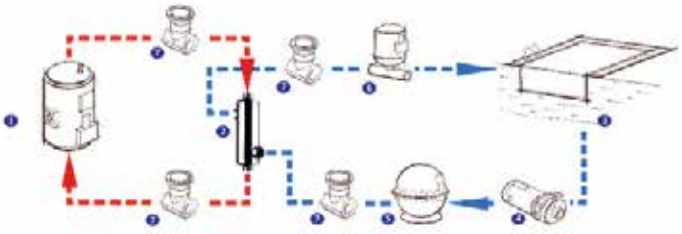
1. Synthetic Seawater (pH=8.2) 168 hours at 149°F
2. 30 day exposure in natural seawater at 48-59°F

ALLOY STRENGTH COMPARISONS

Alloy	Min.Tensile Strength (Mpa)	Max. Stress @ 200°F (Mpa)
90/10 CuNi	275	65.5
SS316	483	97.9
254SMo®	648	164.8
NICROM-24	690	180.6

NICROM-24 is a tradename of AIC Inc.
254SMo® is a registered trademark of Avesta Sheffield AB

TYPICAL POOL INSTALLTION



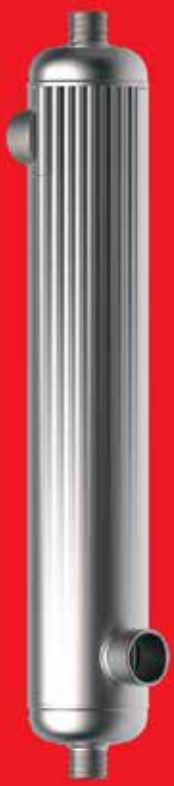
1 Boiler 2 Heat exchanger 3 Swimming Pool 4 Pump 5 Filter 6 Chlorine Feeder 7 Gate Valve



- Boiler/Heating Circuit through the TUBE SIDE
- Pool Circuit through the SHELL SIDE
- Connect in counter-current flow to achieve maximum effectiveness

SWIMMING POOL HEAT EXCHANGERS | aico







b6 | m | TW



About AIC

With over a decade of experience, AIC is a renowned specialist in the design, engineering, and fabrication of stainless steel and titanium heat exchangers.

Our two manufacturing locations and teams of seasoned in-house engineers, designers, and manufacturing specialists, ensure that AIC remains at the forefront of advanced heat transfer solutions.

With proven product designs, a "no compromise on quality" attitude, and automated production processes, we are able to carry out the most complex and technologically advanced projects.

Our state-of-the-art facilities utilize the most leading edge processes, advanced automated and robotic systems, and well sourced materials for the most stringent of applications. CFD analysis and simulation software improve our modelling capabilities and help analyze multiple design variations.

Our own in-house tube mills and sophisticated CNC equipment provide substantial technological flexibility and minimal product development times.

AIC products are manufactured in accordance with the guidelines of ASME and PED industry design codes.

Our stringent quality management system ensures that we continue to provide top quality products that clients have come to associate with the AIC brand.

STAINLESS STEEL 316L

b_6



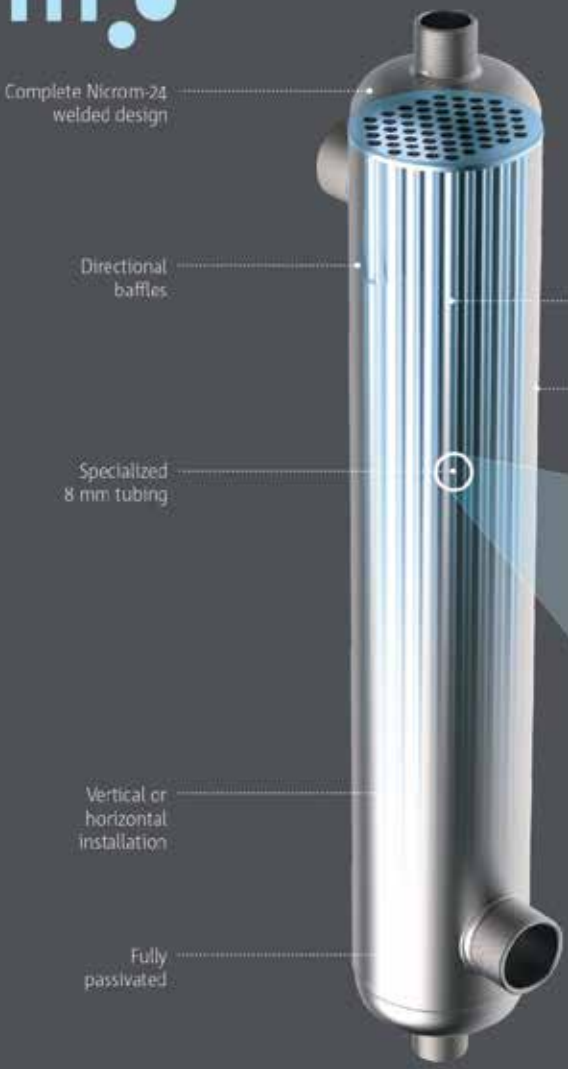


Typical Applications

- Standard chlorinated pools
- Fresh water applications
- Pool heating with low temperatures (condensing boilers, geothermal)
- Oil/glycol coolers
- In-floor heating

Distinct Advantages

- Dense heat transfer area
- Low pressure drops
- Specifically designed for low temperature sources



NICROM-24
super austenitic alloy

CORROSION RESISTANCE
Elevated levels of chromium, molybdenum, and the addition of nitrogen enhance the strength and resistance of NICROM-24 to chloride pitting, crevice corrosion, and stress-corrosion cracking (SCC).

Heating source on the tube side

Pool water on the shell side



Typical Applications

- Salt water swimming pools, spas, hot tubs
- Marine oil coolers
- Waste water heat recovery

Distinct Advantages

- Superior corrosion resistance provides protection for salt water and other marine applications.
- High erosion corrosion resistance suitable for applications with high fluid velocities.
- High material strength for quality performance and long product life.
- Low pressure drops.

POOL POWER PRODUCTS

The AIC series of Pool Power Products define innovation with attention to design excellence and uncompromising quality. Market-driven and market-proven, these products excel in the most rigorous and demanding of environments with unsurpassed performance and finesse. Each intricate design is versatile, yet grounded in rigid standards. Robust, yet finely crafted with the most technically superior materials.

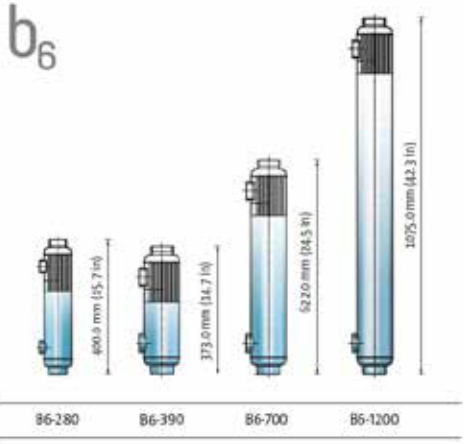
Experience an AIC Pool Power Product: heat exchangers that are efficient in nature, compact in design, and pioneering at heart.

B6 line

A product with a purpose. Complete welded construction with high strength 316L stainless steel, underlined by distinctive densely packed precision tubing, this series is formulated for consistent, reliable performance with high fluid velocities and a close temperature approach.

Exceptional thermal performance





B6 Line *SS 316L*

1. Calculate Your Pool Capacity

Rectangular pool:
- capacity[m³] = length [m] x width [m] x average depth [m]
- capacity[USGal] = 7.5 x length [ft] x width [ft] x average depth [ft]

Circular pool:
- capacity [m³] = 0.785 x [diameter [m]]² x average depth [m]
- capacity [USGal] = 5.9 x [diameter [ft]]² x average depth [ft]

2. Determine Required Material of Construction

SS 316L	*Nicrom-24*	*Titanium*
Fresh water applications Standard chlorinated pools Chloride concentration below 400mg/l Chlorine concentration below 0.8mg/l (long term) Chlorine concentration below 1.2mg/l (short term)	Salinated pools Salt water applications Chloride concentration above 400mg/l Chlorine concentration above 0.8mg/l (long term) Chlorine concentration above 1.2mg/l (short term)	Complete immunity to chorine and chlorides Salt water systems involving elevated temperatures (e.g. steam) Pool systems using refrigerants as a heating source

A corrosive environment is often the result of multiple variables, not just chemical levels. For systems with operating temperatures above 212°F (100°C), use titanium.

M line

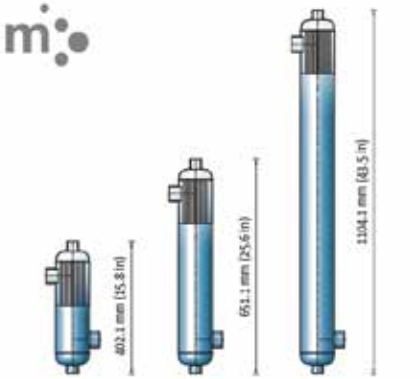
Combine engineering ingenuity with nature's vitality, and yield a resilient, **super austenitic marine alloy** product series that has continuously demonstrated its superior performance and strength over other commercially marketed marine alloys. True to form, the **M-Line** is a marriage of resistances: superior corrosion resistance with high erosion corrosion resistance, highly valued for its use in the seawater and salt water environments.

Unrivaled in its perfection.

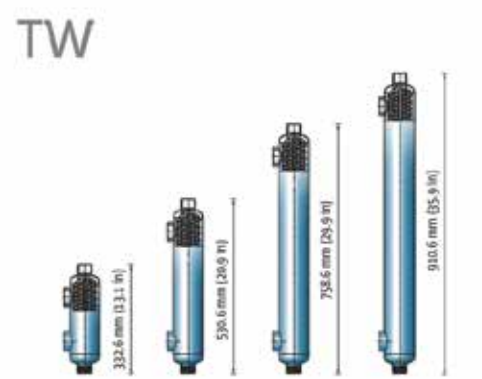
TW line

A unique heating coil geometry that captures and enhances the closest of temperature approach. A one-piece welded **pure titanium** masterpiece, intrinsically designed for the most aggressive of environments. Exceptional material strength and corrosion resistance, matched with unparalleled quality.

Ultralight construction.



M Line *NICROM-24*



TW Line *TITANIUM*

3. Evaluate The Boiler Capacity

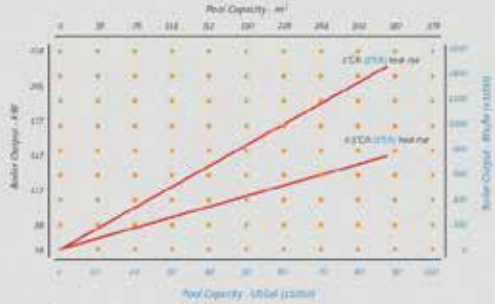
Ensure that your boiler has enough capacity to reach the required pool temperature, and to maintain it at this temperature through daily use.

To maintain the pool at the required temperature, the boiler should have the capacity to handle the pool heat losses, calculated as:

Heat Loss [kW] = 0,0682 x [pool surface area [m²]] x [pool temperature [°C] – air temperature [°C]]

Heat Loss [Btu/hr] = 12x [pool surface area [sqft]] x [pool temperature [°F] – air temperature [°F]]

Boiler Selection Chart



Based on heating source 18.1°F (82.3°C).

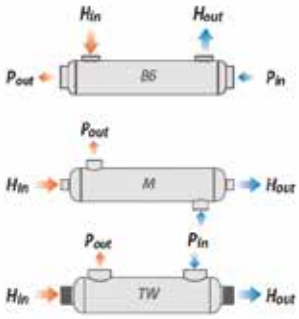
Nominal Pool Capacity

Heat Exchanger Model	Pool Capacity	
	m³	USGal
B6-280	95	25000
B6-390	125	33000
B6-700	235	62000
B6-1200	397	105000
M-180	61	16000
M-300	102	27000
M-500	167	44000
TW100	34	9000
TW200	68	18000
TW300	102	27000
TW400	129	34000

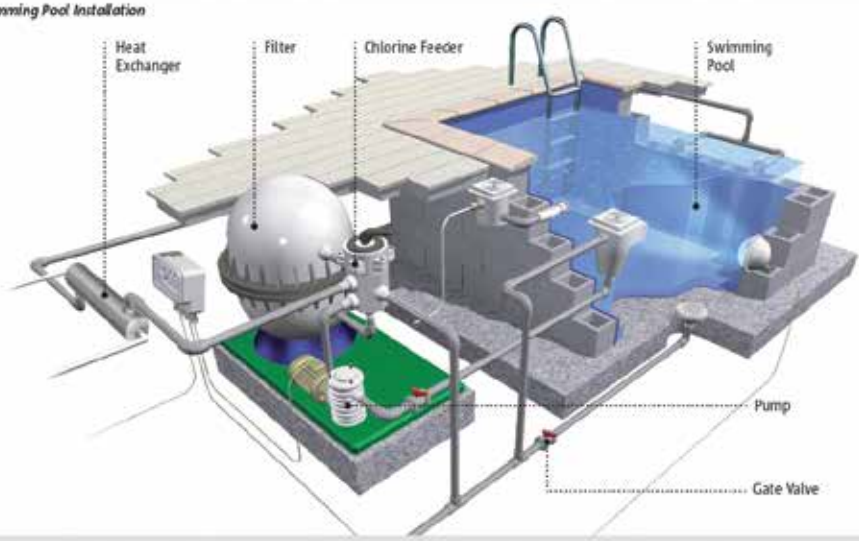
Based on 180°F (82.2°C) supply water and specified nominal flows. See Technical Product Specifications table. For general reference only. Please consult our office for product selection verification.

Flow Direction

H_{in}	Heating Source IN
H_{out}	Heating Source OUT
P_{in}	Pool Water IN
P_{out}	Pool Water OUT

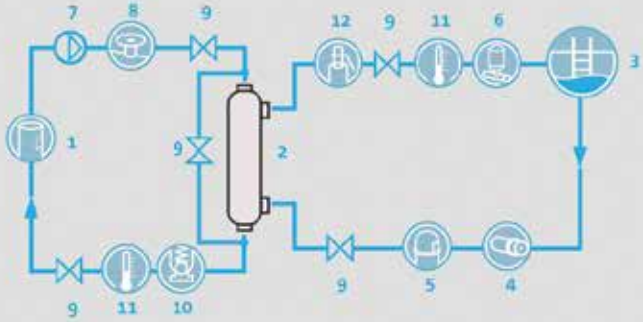


Swimming Pool Installation

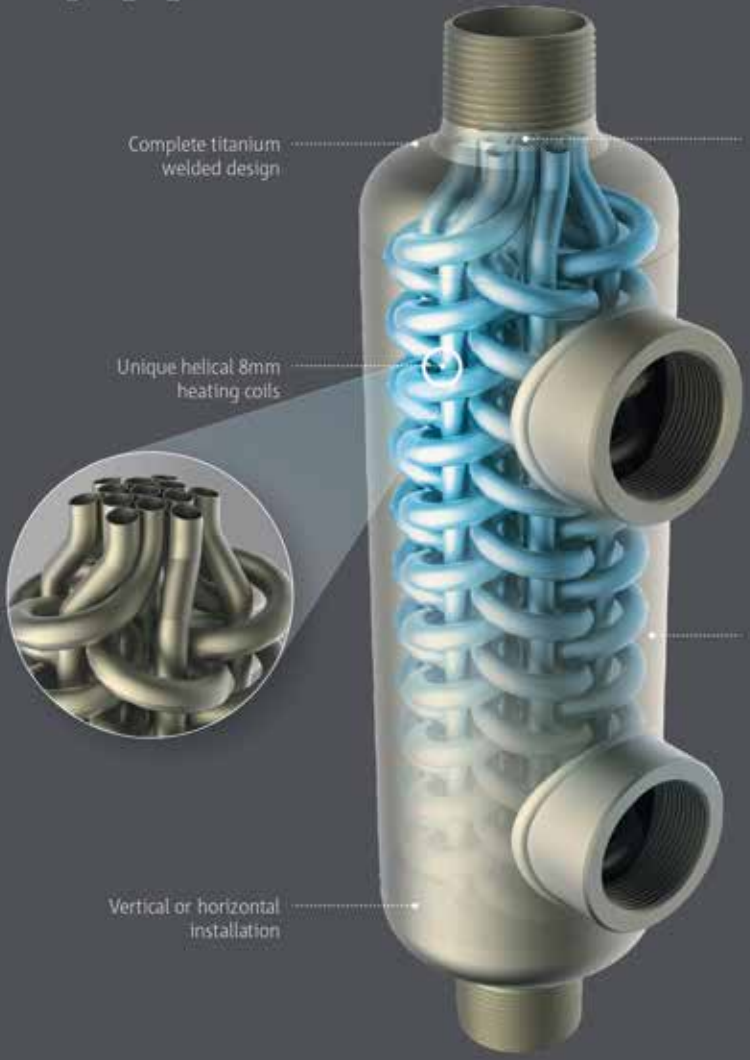


Typical Swimming Pool Installation

1. *Boiler*
2. *Heat Exchanger*
3. *Swimming Pool*
4. *Pump*
5. *Filtration*
6. *Chlorine Feeder*
7. *Circulation Pump*
8. *Flow Control Valve*
9. *Gate Valve*
10. *Check Valve*
11. *Thermometer*
12. *Safety Relief Valve*



TW



Typical Applications

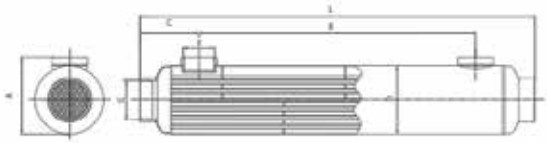
- Applications with extremely high salt water concentration
- Swimming pools heated by high temperature sources (steam, refrigerants, solar)
- Corrosive fluids

Distinct Advantages

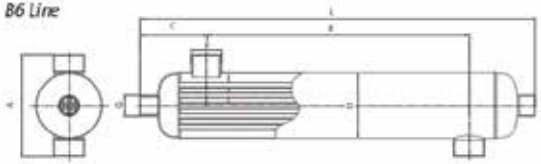
- Total immunity to salt corrosion even at high temperatures
- Ultra-high thermal performance
- Coil expansion handles extreme temperature differences
- Light weight
- Condensate sub-cooling

Technical Product Specifications

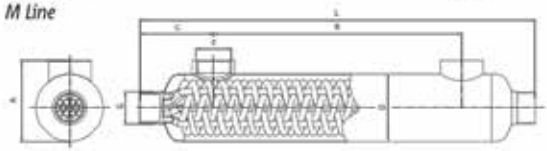
Heat Exchanger Model	Dimensions										Connections		Heat Transfer Area	
	L		A		B		C		Ø D		F	G		
	mm	in	mm	in	mm	in	mm	in	mm	in	Shell	Tubes	m²	sq ft
B6-280	400.0	15.7	94.5	3.7	243.0	9.4	80.0	3.1	80.0	3.1	1"	1½"	0.47	5.10
B6-350	373.0	14.7	117.6	4.6	193.0	7.6	90.0	3.5	103.6	4.1	1½"	2"	0.60	6.50
B6-700	622.0	24.5	117.6	4.6	442.0	17.4	90.0	3.5	103.6	4.1	1½"	2"	1.15	12.40
B6-1200	1075.0	42.3	117.6	4.6	895.0	35.2	90.0	3.5	103.6	4.1	1½"	2"	2.14	23.00
M-180	402.1	15.8	160.0	6.3	193.0	7.6	104.6	4.1	103.6	4.1	1½"	1"	0.44	4.70
M-300	651.1	25.6	160.0	6.3	442.0	17.4	104.6	4.1	103.6	4.1	1½"	1"	0.84	9.00
M-500	1 104.1	43.5	160.0	6.3	895.0	35.2	104.6	4.1	103.6	4.1	1½"	1"	1.56	16.80
TW-100	332.6	13.1	108.9	4.3	134.6	5.3	99.0	3.9	90.4	3.6	1½"	1¼"	0.21	2.24
TW-200	530.6	20.9	108.9	4.3	332.6	13.1	99.0	3.9	90.4	3.6	1½"	1¼"	0.38	4.15
TW-300	758.6	29.9	108.9	4.3	560.6	22.1	99.0	3.9	90.4	3.6	1½"	1¼"	0.58	6.26
TW-400	910.6	35.9	108.9	4.3	712.6	28.1	99.0	3.9	90.4	3.6	1½"	1¼"	0.72	7.71



B6 Line



M Line



TW Line

Standard materials	
B6 LINE	Stainless Steel 316 L
M LINE	Nicrom-24
TW LINE	Titanium
Maximum allowable working pressure	
B6 LINE	10 bar / 150 PSIG
M LINE	10 bar / 150 PSIG
TW LINE	10 bar / 150 PSIG
Maximum allowable working temperature	
B6 LINE	208°C / 406°F
M LINE	208°C / 406°F
TW LINE	120°C / 248°F

Heat Exchanger Model	Nominal Capacity		Hot Water Side				Cold Water Side			
			flow		pressure drop		flow		pressure drop	
	kW	BTU/h	l/min	USGPM	kPa	PSI	l/min	USGPM	kPa	PSI
B6-280	82	280,000	125	33.0	22.4	3.3	250	66.1	14.8	2.2
B6-350	114	390,000	260	68.7	30.6	4.4	520	137.4	26.8	3.9
B6-700	205	700,000	215	56.8	14.3	2.1	430	113.6	25.0	3.6
B6-1200	352	1,200,000	238	62.9	25.2	3.7	476	125.8	47.0	6.8
M-180	53	180,000	100	26.4	7.0	1.0	150	39.6	8.7	1.3
M-300	88	300,000	105	27.7	8.2	1.2	157	41.6	8.6	1.3
M-500	146	500,000	120	31.7	11.4	1.7	180	47.6	11.8	1.7
TW-100	29	100,000	17	4.6	6.1	0.9	38	10.0	0.3	0.1
TW-200	57	200,000	28	7.5	26.7	3.9	61	16.0	1.4	0.2
TW-300	87	300,000	36	9.5	63.2	9.2	76	20.0	2.9	0.4
TW-400	113	400,000	35	9.1	71.7	10.4	265	70.0	40.7	5.9

Nominal Capacity Values are based on heating water 180°F (82.2°C) and return pool water 80°F (26.7°C)

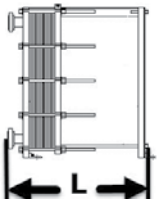


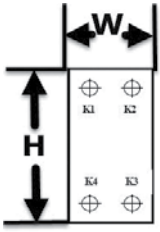
We are certified by renowned international inspection authorities. Our quality process and management systems fulfill the requirements of ISO 9001 Quality Management System. AIC heat exchangers are designed, tested and manufactured in accordance with ASME (Section IV and VIII) and PED (97/23/UE) regulations.

AM/AP-Line Titanium Heat Exchangers



Also available in a full Stainless steel Unit





	Standard	W	H	L	Max Flow	Connections	LIST
	Model #:	(in)	(in)	(in)	(USGPM)	(NPT)	PRICE
Special Order	AM-1000Ti	8	18.6	17.2	42	1.25"	PLEASE CALL
Special Order	AM-1450Ti	8	18.6	17.2	58	1.25"	PLEASE CALL
Special Order	AP-2500Ti	11.8	27.3	17.2	150	2"	PLEASE CALL
Special Order	AP-3000Ti	11.8	27.3	17.2	180	2"	PLEASE CALL
Special Order	AP-3800Ti	11.8	27.3	17.2	225	2"	PLEASE CALL

THE AM/AP ADVANTAGE

Corrosion resistant materials of construction reduce product lifecycle costs, due to less downtime and maintenance requirements.

Gasketed plate and frame design allows for removal, addition, and replacement of all components, for ease of inspection, maintenance, and changes in capacity.

Rugged, compact structure for durable, trouble-free service.



THE TITANIUM SOLUTION

Unlike other commercially available heat exchanger materials on the market, titanium is fully immune to corrosive attacks by salt and sea water, high chlorine concentration solutions, and has exceptional resistance to other media such as acids and alkalis.

- High structural strength lends to less material requirements
- Immunity to corrosion leaves surfaces smooth and clear for efficient heat transfer
- Erosion-corrosion resistance enables high operating velocities.

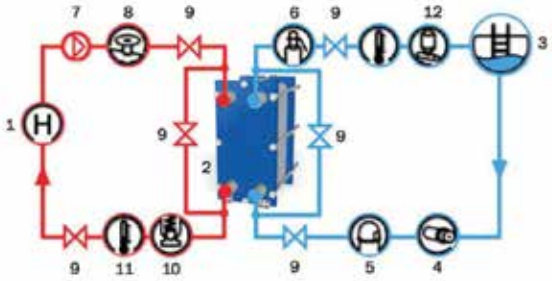
Once considered an inaccessible material for standard construction, titanium has become a mainstream component of systems for various industries. Utilizing the superior qualities of titanium in the design of the AM/AP heat exchangers has resulted in a product line with exceptional value and long continuous service.

There are special build models of all of these plate and frame units that are available for various applications. Changes include plate style, material type, gasket material, and also connection types. Consult our office for product selection verification.

TITANIUM IS FOR USE IN SALT WATER APPLICATIONS!

THE SALT WATER ADVANTAGE

AM/AP's inherent plate designs make them the optimal choice for applications with close temperature approaches, and married with non-corrosive materials, create the ideal solution for the salt water pool market, and other marine environments. The AM/AP series covers a comprehensive range of capacities, suitable for all residential and commercial applications.



Typical swimming pool installation

1. Boiler
2. Heat Exchanger
3. Swimming Pool
4. Pump
5. Filtration
6. Chlorine Feeder
7. Circulation Pump
8. Flow Control Valve
9. Gate Valve
10. Check Valve
11. Thermometer
12. Safety Relief Valve

POOL - QUICK SIZING GUIDE

...with **BOILER** source 180°F

MODEL	Nominal Capacity* (MBH)	Pool Size (Gallons)
AM-1000Ti	1,000	88,000
AM-1450Ti	1,450	127,000
AP-2500Ti	2,500	220,000
AP-3000Ti	3,000	260,000
AP-3800Ti	3,800	330,000

* Nominal Values are based on a boiler source at 180°F, with 120°F temperature differential between incoming heating, and heated, water.

...with **GEOTHERMAL** source (108°F)

MODEL	Nominal Capacity* (MBH)	Pool Size (Gallons)
AM-1000Ti	350	30,000
AM-1450Ti	500	44,000
AP-2500Ti	800	70,000
AP-3000Ti	950	84,000
AP-3800Ti	1200	105,000

* Nominal Values are based on a geothermal heating source (30% propylene glycol) at 108°F.

...with **SOLAR** source 160°F

MODEL	Nominal Capacity* (MBH)	Pool Size (Gallons)
AM-1000Ti	700	62,000
AM-1450Ti	1,000	88,000
AP-2500Ti	1,600	140,000
AP-3000Ti	2,000	175,000
AP-3800Ti	2,500	220,000

* Nominal Values are based on a solar heating source (40% propylene glycol) at 160°F.

sample geothermal pool application

Model	AM-1000Ti	
	Primary Side	Swimming Pool
Fluid	30% Prop. Glycol	Salt Water
Temperatures	108°F	82°F
Flows	20 USGPM	35 USGPM
Pressure Drop	4 PSI	9 PSI
Heat Load	230,000 BTU/Hr	

Information Needed to Size a Plate-to-Plate Heat Exchanger

Other useful information on the source side:

Operating pressure _____

% of Glycol if any _____

Max pressure drop or acceptable head pressure. _____

Parameter 1

Load Side BTU's Needed

Or

Load side GPM

Other useful information on the load side:

Operating pressure _____

% of Glycol if any _____

Max pressure drop or acceptable head pressure. _____

Parameter 2
Incoming Water temp from the heat source.

Parameter 4
Water temp going to the load side.



This shows counter current flow design

Parameter 3
Leaving Water temp back to the heat source.

Parameter 5
Incoming Water temp from the load side.

Parameters in RED are REQUIRED!

WARNING - PLEASE MAKE NOTE: THIS UNIT IS NOT FOR USE IN POOL APPLICATIONS!

Information Needed to Size a Shell & Tube Heat Exchanger

Other useful information on the source side:

Operating pressure_____

% of Glycol if any _____

Max pressure drop or acceptable head pressure. _____

Parameter 1

Load Side BTU's Needed

Or

Load side GPM

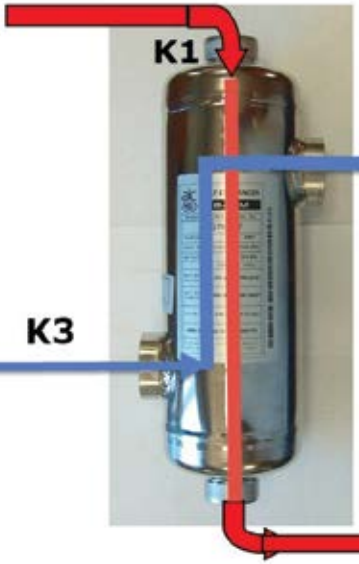
Other useful information on the load side:

Operating pressure _____

% of Glycol if any _____

Max pressure drop or acceptable head pressure. _____

Parameter 2
Incoming Water temp from the heat source.



Parameter 4
Water temp going to the load side.

Parameter 5
Incoming Water temp from the load side.

Parameter 3
Leaving Water temp back to the heat source.

Parameters in RED are REQUIRED!

WARNING - PLEASE MAKE NOTE IF THIS IS A SALT WATER APPLICATION OR OVER 3PPM CHLORINE.

Special Order Heat Exchangers



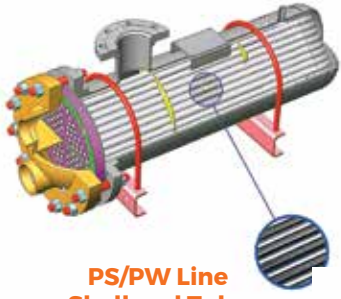
A-Line Plate and Frame



Steam Pool HX



JAD Line
Shell and coil



PS/PW Line
Shell and Tube



L-Line Single and
Double Walled

ASK ABOUT OUR NEW LINE OF TITANIUM PLATE AND FRAME HEAT EXCHANGERS.

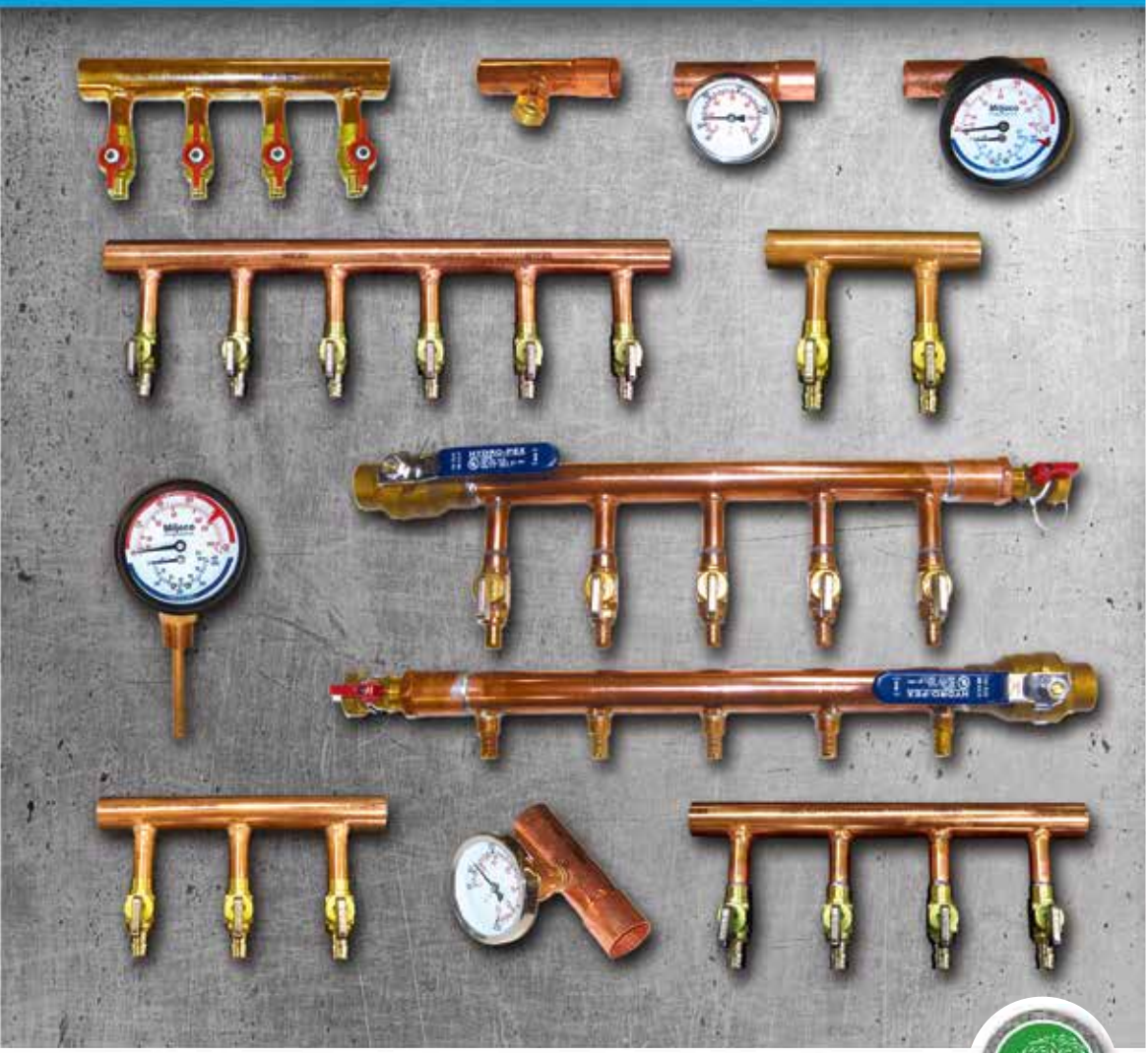
PERFECT FOR USE WITH LOW WATER TEMPERATURES SUPPLIED FROM GEO THERMAL AND SOLAR.

Also available in custom order are:

- **ASME**
- **Steam Coils**
- **Hot Water Coils**
- **Chilled Water Coils**
- **Evaporator Coil-DX Coils**

These are all special order to the job.
Please call for correct sizing and use.

WSD MANIFOLDS & GAUGES



WSD 1" Manifolds

WSD 1" Stainless steel modular manifolds operate with a maximum of 194-degree water temperature and 87 psi operating pressure with a flowmeter range of 0-2 gpm. All manifolds come with flow meters with integrated shut off stems providing positive shut off for loop isolation during charging and testing. Total maximum flow rate 14 GPM.



WSD 1" Manifold Kits

Description	Part Number	Qty.	List Price
2 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-2SS	1	$313.59
3 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-3SS	1	$356.18
4 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-4SS	1	$401.43
5 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-5SS	1	$449.63
6 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-6SS	1	$497.25
7 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-7SS	1	$531.53
8 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-8SS	1	$601.95
9 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-9SS	1	$623.57
10 Port 1" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.00-10SS	1	$685.33



WSD 1" Manifold (only)

Description	Part Number	Qty.	List Price
2 Port 1" Stainless Steel Flow Balancing Manifold	MSET-1.00-2SS	1	$155.65
3 Port 1" Stainless Steel Flow Balancing Manifold	MSET-1.00-3SS	1	$203.55
4 Port 1" Stainless Steel Flow Balancing Manifold	MSET-1.00-4SS	1	$257.15
5 Port 1" Stainless Steel Flow Balancing Manifold	MSET-1.00-5SS	1	$310.42
6 Port 1" Stainless Steel Flow Balancing Manifold	MSET-1.00-6SS	1	$366.69

WSD 1 1/4" Manifold Kits

WSD 1 1/4" Stainless steel modular manifolds operate with a maximum of 194-degree water temperature and 87 psi operating pressure with a flowmeter range of 0-4 gpm. Total maximum flow rate 19 GPM.



WSD 1 1/4" Manifold Kits

Description	Part Number	Qty.	List Price
2 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-2SS	1	$460.20
3 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-3SS	1	$523.44
4 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-4SS	1	$572.09
5 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-5SS	1	$631.99
6 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-6SS	1	$684.82
7 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-7SS	1	$710.95
8 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-8SS	1	$782.50
9 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-9SS	1	$810.20
10 Port 1 1/4" Stainless Steel Flow Balancing Manifold Kit (Valves, Gauges, Vents)	MCSET-1.25-10SS	1	$891.73



WSD 1 1/4" Manifold (only)

Description	Part Number	Qty.	List Price
2 Port 1 1/4" Stainless Steel Flow Balancing Manifold	MSET-1.25-2SS	1	$172.51
3 Port 1 1/4" Stainless Steel Flow Balancing Manifold	MSET-1.25-3SS	1	$232.65
4 Port 1 1/4" Stainless Steel Flow Balancing Manifold	MSET-1.25-4SS	1	$283.09
5 Port 1 1/4" Stainless Steel Flow Balancing Manifold	MSET-1.25-5SS	1	$343.18
6 Port 1 1/4" Stainless Steel Flow Balancing Manifold	MSET-1.25-6SS	1	$400.00

WSD Manifold Accessories



Manifold Coupling Kits

Description	Part Number	Qty.	List Price
1" Manifold Coupling Kit (2)	MCOUP1.00	1	$52.20
1 1/4" Manifold Coupling Kit (2)	MCOUP1.25	1	$170.90

Allows you to couple two manifolds together when you have a manifold location requiring more than six zones. Eample: combine two four port manifolds into an eight port.



Manifold Elbow Kits

Description	Part Number	Qty.	List Price
1" Manifold Elbow Kit (2)	MELLK1.00	1	$54.63
1 1/4" Manifold Elbow Kit (2)	MELLK1.25	1	$130.29

Elbow kits allow for a compact 90-degree turn making it very easy to connect vertical supply and return pipes.



Manifold Extension Sets

Description	Part Number	Qty.	List Price
1" Manifold Extension Set w/ Flow Supply & Return	MEXSET1.00	1	$151.16

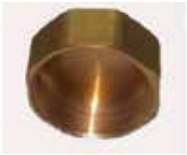
The extension set makes it very simple to add a zone to an existing manifold.



End Sets w/ Hose Adapter

Description	Part Number	Qty.	List Price
1" Female BSP Manifold End Set w/ Garden Hose Thread (2)	MES1.00	1	$83.06
1 1/4" Female BSP Manifold End Set w/ Garden Hose Thread (2)	MES1.25	1	$106.71

WSD Manifold Accessories



Manifold End-Cap Kits

Description	Part Number	Qty.	List Price
1" Manifold End-Cap Kit (2)	MECAP1.00	1	$12.66
1 1/4" Manifold End-Cap Kit(2)	MECAP1.25	1	$17.28



Multi-Purpose End Kits

Description	Part Number	Qty.	List Price
1" Manifold Multi-Purpose End Kit w/ Vent and Charging Port (2)	MECVD1.00	1	$70.43
1 1/4" Manifold Multi-Purpose End Kit w/ Vent and Charging Port (2)	MECVD1.25	1	$77.92



Manifold Ball Valve

Description	Part Number	Qty.	List Price
1" Manifold Ball Valve Kit (2)	MBVSK1.00	1	$108.40
1 1/4" Manifold Ball Valve Kit (2)	MBVSK1.25	1	$250.10



3/4" Eurocone Mini Ball Valve

Description	Part Number	Qty.	List Price
3/4" Eurocone Mini Ball Valve	MOUTVALVE.75	1	$21.25

Provides positive shutoff and isolation of loops on 2013 and 2015 manifolds

WSD Manifold Fitting Series



Manifold Fitting Series

Description	Part Number	Qty.	List Price
3/8" Connection for PEX x 3/4" EC	MFTG.38PEX	1	$6.67
1/2" Connection for PEX x 3/4" EC	MFTG.50PEX	1	$7.19
5/8" Connection for PEX x 3/4" EC	MFTG.625PEX	1	$8.18
3/4" Connection for PEX x 3/4" EC	MFTG.75PEX	1	$15.61
1/2" Connection for PAP x 3/4" EC	MFTG.50PAP	1	$7.19
5/8" Connection for PAP x 3/4" EC	MFTG.625PAP	1	$8.18
3/4" Connection for PAP x 3/4" EC	MFTG.75PAP	1	$16.67



Manifold Gasket Series

Description	Part Number	Qty.	List Price
1" Manifold Gasket	MGASKET1.00	1	$2.91
1 1/4" Manifold Gasket	MGASKET1.25	1	$3.49



Auto Air Vent

Description	Part Number	Qty.	List Price
3/8" BSP Auto Air Vent	MVENT	1	$28.81

WSD Pro Zone Actuators / Motors



Eurocone

Description	Part Number	Qty.	List Price
3/4" Eurocone Blank Cap w/ Gasket	MOUTCAP.75	1	$7.34



Replacement Temp Gauge

Description	Part Number	Qty.	List Price
Replacement Manifold Temperature Gauge	MTGUAGE	1	$16.60



Pro Zone Actuators / Motors

Description	Part Number	Qty.	List Price
ProMix Zone Actuator NC, 24 VDC, 4 Wire	MACT/END	1	$45.04

ProZone Actuators match the ProMix line of manifolds 2013xx/2015xx. 4 wire models include an end switch to operate a pump or other function only when actuator is fully opened. Operating temperature 32* F - 122*F, Power supply 24 VAC, Action is Open/Close, NC normally closed.

Helpful Hints and Programs to Help You Better Understand the Manifold Section Offered By Willow Springs S.R.A. LLC.

Cut Program

We will cut any of the stock 72", 3" on center (up to 2" headers) product in the following section. These sizes can be cut with no surcharges.

Cut manifold pricing is based off the following formula:
Full stick price ÷ Outlets of full stick x number of desired outlets = cut price

Any manifolds with more than 12 outlets may be coupled.

Any manifold less than a full stick is considered special order and cannot be returned.

Box Price Program

Purchase one full box of any size and receive box lot pricing on the remainder of your order. This is per order basis. Cut pieces excluded.

Example:
Buy a box of (5) CC1005024 at box lot price, you can buy (1) stick of CX1507524V at box lot price as well even though that item comes in a box of (2).

CALIFORNIA PROPOSITION 65 WARNING
Cancer and Reproductive Harm –
www.P65Warnings.ca.gov

Understanding Our Part Numbers

CMV1005008PEX

The first letters distinguish how the manifold is terminated.

- CC= Sweat Header x Sweat Drop
- CX= Sweat Header x 1/2" Pex Crimp
- PMR= Pex Manifold Return
- PMS= Pex Manifold Supply
- WSD= Sweat Header x 3/4" Pex Crimp
- CMA= Sweat Header x Compression Adaptor
- CMV= Sweat Header x Compression Valve
- EV= Sweat Header x F2080 Valve
- EA= Sweat Header x F2080 Adaptor
- PRPXV=Sweat Header x F1960 Valve
- PRPXA= Sweat Header x F1960 Adaptor
- CMR= Compression Manifold Return
- CMS= Compression Manifold Supply

The numbers determine copper and tubing sizes

- First 3 numbers are the header size.
- Next 2 numbers are the tubing size (if applicable)
- The last 2 are the number of drops on the manifold

Any letters after the numbers will determine tubing style or fitting style (if applicable)

- PEX= Pex tubing
- PAP= PEX-AL-PEX tubing

WSD Custom Tee Products



MADE IN CANADA

72" Long | 36 Outlets, 2" On Center

1" Header with (36) 1/2" Copper Outlets

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CC1005036	1" x 1/2" CU	5	$487.91	$390.33



MADE IN CANADA

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 1/2", 3/4" or 1" Copper Outlets

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CC1005024	1" x 1/2" CU	5	$245.13	$196.10
CC1255024	1-1/4" x 1/2" CU	4	$309.20	$247.36
CC1505024	1-1/2" x 1/2" CU	3	$370.38	$296.31
CC2005024	2" x 1/2" CU	2	$542.68	$434.14
CC1007524	1" x 3/4" CU	4	$263.85	$211.08
CC1257524	1-1-/4" x 3/4" CU	4	$325.85	$260.68
CC1507524	1-1/2" x 3/4" CU	3	$391.19	$312.95
CC2007524	2" x 3/4" CU	2	$563.49	$450.79
CC1251024	1¼" x 1" CU	4	$346.66	$277.33
CC1501024	1½" x 1" CU	3	$412.00	$329.60
CC2001024	2" x 1" CU	2	$584.30	$467.44



MADE IN CANADA

72" Long | 18 Outlets, 4" On Center

1", 1-1/4", 1-1/2" or 2" Header with (18) 1/2" or 3/4" Copper Outlets

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CC1005018	1" x 1/2"	5	$201.94	$161.55
CC1007518	1" x 3/4" CU	4	$216.00	$172.80
CC1257518	1-1/4" x 3/4" CU	4	$269.67	$215.73
CC1507518	1-1/2" x 3/4" CU	3	$326.18	$260.94
CC2007518	2" x 3/4" CU	2	$475.05	$380.04

WSD Custom Tee Products



MADE IN CANADA

72" Long | 12 Outlets, 6" On Center

1", 1-1/4", 1-1/2" or 2" Header with (12) 1/2" or 3/4" Copper Outlets

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CC1005012ER	1" x 1/2" CU	5	$158.77	$127.02
CC1007512ER	1" x 3/4" CU	4	$168.14	$134.51
CC1257512ER	1-1/4" x 3/4" CU	4	$213.49	$170.79
CC1507512ER	1-1/2" x 3/4" CU	3	$261.14	$208.91



MADE IN CANADA

72" Long | 9 Outlets, 8" On Center

1", 1-1/4", 1-1/2" or 2" Header with (9) 3/4" or 1" Copper Outlets

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CC100750972	1" x 3/4" CU	4	$224.51	$179.61
CC1257509	1-1/4" x 3/4" CU	4	$295.59	$236.47
CC1251009	1-1/4" x 1" CU	3	$283.99	$227.19
CC1507509	1-1/2" x 3/4" CU	3	$363.07	$290.46
CC1501009	1-1/2" x 1" CU	3	$352.45	$281.96
CC2007509	2" x 3/4" CU	2	$497.55	$398.04
CC2001009	2" x 1" CU	2	$508.17	$406.54



MADE IN CANADA

72" Long | 6 Outlets, 12" On Center

1-1/4", or 1-1/2" Header with (6) 3/4" or 1" Copper Outlets

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CC125750672	1-1/4" x 3/4" CU	4	$244.28	$195.42
CC150750672	1-1/2" x 3/4" CU	3	$306.37	$245.10
CC125100672	1-1/4" x 1" CU	4	$253.12	$201.70

F1807 Pex Crimp Manifolds



WSD 1/2" PEX CRIMP
for ASTM F1807 Copper Manifolds Open Both Ends



MADE IN CANADA

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", or 1-1/2" Header with (24) 1/2" or 3/4" Crimpex Mini ball Valves

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CX1005024V	1" x 1/2" PEX Mini Ball Valve	2	$601.15	$480.92
CX1255024V	1-1/4" x 1/2" PEX Mini Ball Valve	2	$682.91	$546.33
CX1505024V	1-1/2" x 1/2" PEX Mini Ball Valve	1	$838.41	N.A.
CX2005024V	2" x 1/2" PEX Mini Ball Valve	1	$990.72	N.A.

WSD CUSTOM TEE PRODUCTS



MADE IN CANADA

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", or 1-1/2" Header with (24) 1/2" or 3/4" CRIMPEX (ASTM F877)

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CX1005024	1" x 1/2" PEX	6	$280.07	$224.06
CX1255024	1-1/4" x 1/2" PEX	4	$344.17	$275.33
CX1505024	1-1/2" x 1/2" PEX	1	$475.11	N.A.
CX2005024	2" x 1/2" PEX	1	$627.41	N.A.



MADE IN CANADA

72" Long | 36 Outlets, 2" On Center

1", 1-1/4", or 1-1/2" Header with (24) 1/2" or 3/4" CRIMPEX (ASTM F877)

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CX1005036	1" x 1/2" PEX	6	$576.31	$461.05
CX1255036	1 1/4" x 1/2" PEX	4	$695.42	$556.34

WSD 1/2" PEX CRIMP
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

PEX Crimp Mini Ball Valve Manifold

	Valved Return Part #	Return List Price Each
2 Loop	CX1005002VPEX	$50.10
3 Loop	CX1005003VPEX	$75.14
4 Loop	CX1005004VPEX	$100.19
5 Loop	CX1005005VPEX	$125.24
6 Loop	CX1005006VPEX	$150.29
7 Loop	CX1005007VPEX	$175.34
8 Loop	CX1005008VPEX	$200.39
9 Loop	CX1005009VPEX	$225.43
10 Loop	CX1005010VPEX	$250.48
11 Loop	CX1005011VPEX	$275.53
12 Loop	CX1005012VPEX	$300.58

ASTM F876/877 Adaptor Manifold

	Adaptor Supply Part #	Supply List Price Each
2 Loop	CX1005002PEX	$23.34
3 Loop	CX1005003PEX	$35.01
4 Loop	CX1005004PEX	$46.68
5 Loop	CX1005005PEX	$58.35
6 Loop	CX1005006PEX	$70.02
7 Loop	CX1005007PEX	$81.69
8 Loop	CX1005008PEX	$93.36
9 Loop	CX1005009PEX	$105.03
10 Loop	CX1005010PEX	$116.69
11 Loop	CX1005011PEX	$128.36
12 Loop	CX1005012PEX	$140.03

Supply Includes: (1) 1" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" Pex Crimp adaptors for pipes meeting (ASTM F876/877).

Return Includes: (1) 1" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" Pex Crimp mini-ball valves for pipes meeting (ASTM F876/877).

Please call for pricing on 1-1/4", 1-1/2", and 2" headers. Items on this page are made per order and are considered special order. Please allow 1-2 days production time plus freight time.

WSD PEX SHUT OFF VALVE HEADERS (ASTM F877)



MADE IN CANADA

1" with Header 2,3,4,6 and 12 1/2" Crimpex Mini ball Valves on 2" Ctrs. Expanded 1 End

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
CVP1005002	1" x 1/2", (2) Crimpex Mini Ball Valve	5	$60.89	$48.72
CVP1005003	1" x 1/2", (3) Crimpex Mini Ball Valve	5	$89.19	$71.35
CVP1005004	1" x 1/2", (4) Crimpex Mini Ball Valve	5	$117.46	$93.97
CVP1005006	1" x 1/2", (6) Crimpex Mini Ball Valve	5	$174.03	$139.23
CVP1005012	1" x 1/2", (12) Crimpex Mini Ball Valve	5	$343.74	$274.99

PEX HEADERS (ASTM F877)



MADE IN CANADA

1" with Header 2,3,4, and 6 1/2" Crimpex (ASTM F877) Ftg, 2" Ctrs, Expanded 1 End

Part Number	Description	Units Per Box	Single Lot List	Box Lot List / Each
SX1005002EXPL	1" x 1/2", (2) Crimpex Fitting	5	$39.38	$31.50
SX1005003EXPL	1" x 1/2", (3) Crimpex Fitting	5	$55.39	$44.31
SX1005004EXPL	1" x 1/2", (4) Crimpex Fitting	5	$71.41	$57.12
SX1005006EXPL	1" x 1/2", (6) Crimpex Fitting	5	$103.43	$82.75

WSD 1" X 1/2" COMPLETE MANIFOLDS

Assembled in the USA
with foreign and domestic parts

Pex Crimp F1807

Part #	Valved Return List Price
PMR2PEX	$97.56
PMR3PEX	$119.70
PMR4PEX	$141.84
PMR5PEX	$163.98
PMR6PEX	$186.12
PMR7PEX	$208.27
PMR8PEX	$230.41
PMR9PEX	$252.55
PMR10PEX	$274.69
PMR11PEX	$296.83
PMR12PEX	$318.98



Part #	Adaptor Supply List Price
PMS2PEX	$73.90
PMS3PEX	$84.12
PMS4PEX	$94.53
PMS5PEX	$104.85
PMS6PEX	$115.17
PMS7PEX	$125.48
PMS8PEX	$135.80
PMS9PEX	$146.11
PMS10PEX	$156.43
PMS11PEX	$166.74
PMS12PEX	$177.06



Supply Includes: (1) 1" header with 1/2" adaptors, (1) 1" ball valve, (1) 1/4 turn boiler drain with cap.

Return Includes: (1) 1" header with 1/2" mini-ball valves, (1) 1" ball valve, (1) 1/4 turn boiler drain with cap.

Please call for pricing on 1-1/4", 1-1/2", and 2" headers. Note: Pex manifolds are crimp style only.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 3/4" PEX CRIMP
for ASTM F1807 Copper Manifolds Full Sticks



Assembled in the USA
with foreign and domestic parts

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 3/4" Crimp Pex Ball Valves (ASTM F876/877) soldered on

Part Number	Description	Units Per Box	Single Lot List
WSD1007524V	1" x 3/4" PEX	1	$787.92
WSD1257524V	1-1/4" x 3/4" PEX	1	$842.72
WSD1507524V	1-1/2" x 3/4" PEX	1	$900.47
WSD2007524V	2" x 3/4" PEX	1	$1052.80



Assembled in the USA
with foreign and domestic parts

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 3/4" Crimp Pex Adaptors (ASTM F876/877) soldered on

Part Number	Description	Units Per Box	Single Lot List
WSD1007524	1" x 3/4" PEX	1	$409.36
WSD1257524	1-1/4" x 3/4" PEX	1	$464.16
WSD1507524	1-1/2" x 3/4" PEX	1	$521.91
WSD2007524	2" x 3/4" PEX	1	$674.24

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 3/4" PEX CRIMP
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

1" Header with 3/4 Pex outlets



Number of Drops	Valved Return Part #	Return List Price Each
2 Loop	WSD1007502V	$65.66
3 Loop	WSD1007503V	$98.45
4 Loop	WSD1007504V	$131.32
5 Loop	WSD1007505V	$164.15
6 Loop	WSD1007506V	$196.98
7 Loop	WSD1007507V	$229.81
8 Loop	WSD1007508V	$262.64
9 Loop	WSD1007509V	$295.47
10 Loop	WSD1007510V	$328.30
11 Loop	WSD1007511V	$361.18
12 Loop	WSD1007512V	$393.96

Return Includes:
(1) 1" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC with 3/4" Pex Crimp ball valves for pipes meeting (ASTM F876/877).

Supply Includes:
(1) 1" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OCwith 3/4" Pex Crimp adaptors for pipes meeting (ASTM F876/877).

Number of Drops	Adaptor Supply Part #	Return List Price Each
2 Loop	WSD1007502	$34.11
3 Loop	WSD1007503	$51.17
4 Loop	WSD1007504	$68.23
5 Loop	WSD1007505	$85.28
6 Loop	WSD1007506	$102.34
7 Loop	WSD1007507	$119.40
8 Loop	WSD1007508	$136.45
9 Loop	WSD1007509	$153.51
10 Loop	WSD1007510	$170.56
11 Loop	WSD1007511	$187.62
12 Loop	WSD1007512	$204.68



Assembled in the USA
with foreign and domestic parts

1-1/4" Header with 3/4 Pex outlets



Number of Drops	Valved Return Part #	Return List Price Each
2 Loop	WSD1257502V	70.23
3 Loop	WSD1257503V	105.43
4 Loop	WSD1257504V	140.45
5 Loop	WSD1257505V	175.57
6 Loop	WSD1257506V	210.68
7 Loop	WSD1257507V	245.79
8 Loop	WSD1257508V	280.91
9 Loop	WSD1257509V	316.02
10 Loop	WSD1257510V	351.13
11 Loop	WSD1257511V	386.25
12 Loop	WSD1257512V	421.36

Return Includes:
(1) 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC with 3/4" Pex Crimp ball valves for pipes meeting (ASTM F876/877).

Supply Includes:
(1) 1-1/4" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OCwith 3/4" Pex Crimp adaptors for pipes meeting (ASTM F876/877).

Number of Drops	Adaptor Supply Part #	Return List Price Each
2 Loop	WSD1257502	38.68
3 Loop	WSD1257503	58.02
4 Loop	WSD1257504	77.36
5 Loop	WSD1257505	96.70
6 Loop	WSD1257506	116.04
7 Loop	WSD1257507	135.38
8 Loop	WSD1257508	154.72
9 Loop	WSD1257509	174.06
10 Loop	WSD1257510	193.40
11 Loop	WSD1257511	212.74
12 Loop	WSD1257512	232.08

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 3/4" PEX CRIMP
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

1-1/2" Header with 3/4 Pex outlets



Number of Drops	Valved Return Part #	Return List Price Each
2 Loop	WSD1507502V	75.04
3 Loop	WSD1507503V	112.56
4 Loop	WSD1507504V	150.08
5 Loop	WSD1507505V	187.60
6 Loop	WSD1507506V	225.12
7 Loop	WSD1507507V	262.64
8 Loop	WSD1507508V	300.16
9 Loop	WSD1507509V	337.68
10 Loop	WSD1507510V	375.19
11 Loop	WSD1507511V	412.71
12 Loop	WSD1507512V	450.23

Return Includes:
(1) 1-1/2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC with 3/4" Pex Crimp ball valves for pipes meeting (ASTM F876/877).

Supply Includes:
(1) 1-1/2" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC with 3/4" Pex Crimp adaptors for pipes meeting (ASTM F876/877).

Number of Drops	Adaptor Supply Part #	Return List Price Each
2 Loop	WSD1507502	43.49
3 Loop	WSD1507503	65.24
4 Loop	WSD1507504	86.98
5 Loop	WSD1507505	108.73
6 Loop	WSD1507506	130.48
7 Loop	WSD1507507	152.22
8 Loop	WSD1507508	173.97
9 Loop	WSD1507509	195.72
10 Loop	WSD1507510	217.46
11 Loop	WSD1507511	239.21
12 Loop	WSD1507512	260.95



Assembled in the USA
with foreign and domestic parts

2" Header with 3/4 Pex outlets



Number of Drops	Valved Return Part #	Return List Price Each
2 Loop	WSD2007502V	87.76
3 Loop	WSD2007503V	131.60
4 Loop	WSD2007504V	175.47
5 Loop	WSD2007505V	219.33
6 Loop	WSD2007506V	263.20
7 Loop	WSD2007507V	307.07
8 Loop	WSD2007508V	350.93
9 Loop	WSD2007509V	394.80
10 Loop	WSD2007510V	438.67
11 Loop	WSD2007511V	482.53
12 Loop	WSD2007512V	526.40

Return Includes:
(1) 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC with 3/4" Pex Crimp ball valves for pipes meeting (ASTM F876/877).

Supply Includes:
(1) 2" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC with 3/4" Pex Crimp adaptors for pipes meeting (ASTM F876/877).

Number of Drops	Adaptor Supply Part #	Return List Price Each
2 Loop	WSD2007502	56.19
3 Loop	WSD2007503	84.28
4 Loop	WSD2007504	112.37
5 Loop	WSD2007505	140.47
6 Loop	WSD2007506	168.56
7 Loop	WSD2007507	196.65
8 Loop	WSD2007508	224.75
9 Loop	WSD2007509	252.84
10 Loop	WSD2007510	280.93
11 Loop	WSD2007511	309.03
12 Loop	WSD2007512	337.12

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

FI807 Pex Compression Manifolds



WSD 1/2" PEX COMPRESSION
for ASTM F1807 Copper Manifolds



For Standard Pex Pipe ASTM F876/877

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 1/2" PEX Compression Adaptor (ASTM F876/877 pipe)

Part Number	Description	Units Per Box	Single Lot List
CMA1005024PEX	1" x 1/2" Compex	1	$618.14
CMA1255024PEX	1-1/4" x 1/2" Compex	1	$674.79
CMA1505024PEX	1-1/2" x 1/2" Compex	1	$728.87
CMA2005024PEX	2" x 1/2" Compex	1	$881.17



72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 1/2" PEX Compression Mini Ball valves (ASTM F876/877 pipe)

Part Number	Description	Units Per Box	Single Lot List
CMV1005024PEX	1" x 1/2" Compex Valve	1	$747.79
CMV1255024PEX	1-1/4" x 1/2" Compex Valve	1	$804.44
CMV1505024PEX	1-1/2" x 1/2" Compex Valve	1	$858.52
CMV2005024PEX	2" x 1/2" Compex Valve	1	$1,010.82

1" x 1/2" Compression Style Compax Manifolds (F1807)



72" Long

MADE IN CANADA

24 Outlets, 3" On Center

Pipe run 1" with (2), (3) or (4), 1/2" Compax Fittings on 2" Ctrs. Expanded 1 End

Part Number	Description	Units per Box	Single Lot List	Box Lot List / each
CACX1005002	(2) Outlet Compax Fitting Manifold	5	$66.36	$53.09
CACX1005003	(3) Outlet Compax Fitting Manifold	5	$97.39	$77.91
CACX1005004	(4) Outlet Compax Fitting Manifold	5	$128.40	$102.72
CVCX1005002	(2) Outlet Compax Valve Manifold	5	$65.26	$52.21
CVCX1005003	(3) Outlet Compax Valve Manifold	5	$95.74	$76.59
CVCX1005004	(4) Outlet Compax Valve Manifold	5	$126.19	$100.96

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 1/2" PEX COMPRESSION
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877



Number of Loops 1" Header	PEX Compression Mini Ball Valve Manifold Return Part #	Return List Price Each
2 Loop	CMV1005002PEX	$62.32
3 Loop	CMV1005003PEX	$93.47
4 Loop	CMV1005004PEX	$124.63
5 Loop	CMV1005005PEX	$155.79
6 Loop	CMV1005006PEX	$186.95
7 Loop	CMV1005007PEX	$218.11
8 Loop	CMV1005008PEX	$249.26
9 Loop	CMV1005009PEX	$280.42
10 Loop	CMV1005010PEX	$311.58
11 Loop	CMV1005011PEX	$342.74
12 Loop	CMV1005012PEX	$373.89

Full Stick Available on Page 107

Number of Loops 1 Header	For ASTM F876/877 Pipe Adaptor Manifold Supply Part #	Supply List Price Each
2 Loop	CMA1005002PEX	$51.51
3 Loop	CMA1005003PEX	$77.27
4 Loop	CMA1005004PEX	$103.02
5 Loop	CMA1005005PEX	$128.78
6 Loop	CMA1005006PEX	$154.53
7 Loop	CMA1005007PEX	$180.29
8 Loop	CMA1005008PEX	$206.05
9 Loop	CMA1005009PEX	$231.80
10 Loop	CMA1005010PEX	$257.56
11 Loop	CMA1005011PEX	$283.31
12 Loop	CMA1005012PEX	$309.07

1-1/4" Header	Return Part #	Return List Price Each
2 Loop	CMV1255002PEX	$67.04
3 Loop	CMV1255003PEX	$100.56
4 Loop	CMV1255004PEX	$134.07
5 Loop	CMV1255005PEX	$167.59
6 Loop	CMV1255006PEX	$201.11
7 Loop	CMV1255007PEX	$234.63
8 Loop	CMV1255008PEX	$268.15
9 Loop	CMV1255009PEX	$301.67
10 Loop	CMV1255010PEX	$335.18
11 Loop	CMV1255011PEX	$368.70
12 Loop	CMV1255012PEX	$402.22

Full Stick Available on Page 107

1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	CMA1255002PEX	$56.23
3 Loop	CMA1255003PEX	$84.35
4 Loop	CMA1255004PEX	$112.46
5 Loop	CMA1255005PEX	$140.58
6 Loop	CMA1255006PEX	$168.70
7 Loop	CMA1255007PEX	$196.81
8 Loop	CMA1255008PEX	$224.93
9 Loop	CMA1255009PEX	$253.05
10 Loop	CMA1255010PEX	$281.16
11 Loop	CMA1255011PEX	$309.28
12 Loop	CMA1255012PEX	$337.39

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" compression mini-ball valves for (ASTM F876/877) soldered on.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" compression adaptors for (ASTM F876/877) soldered on.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 1/2" PEX COMPRESSION
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877



Number of Loops	PEX Compression Mini Ball Valve Manifold	
1-1/2" Header	Return Part #	Return List Price Each
2 Loop	CMV1505002PEX	$71.54
3 Loop	CMV1505003PEX	$107.32
4 Loop	CMV1505004PEX	$143.09
5 Loop	CMV1505005PEX	$178.86
6 Loop	CMV1505006PEX	$214.63
7 Loop	CMV1505007PEX	$250.40
8 Loop	CMV1505008PEX	$286.17
9 Loop	CMV1505009PEX	$321.95
10 Loop	CMV1505010PEX	$357.72
11 Loop	CMV1505011PEX	$393.49
12 Loop	CMV1505012PEX	$429.26

Full Stick Available on Page 107

Number of Loops	For ASTM F876/877 Pipe Adaptor Manifold	
1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	CMA1505002PEX	$60.74
3 Loop	CMA1505003PEX	$91.11
4 Loop	CMA1505004PEX	$121.48
5 Loop	CMA1505005PEX	$151.85
6 Loop	CMA1505006PEX	$182.22
7 Loop	CMA1505007PEX	$212.59
8 Loop	CMA1505008PEX	$242.96
9 Loop	CMA1505009PEX	$273.33
10 Loop	CMA1505010PEX	$303.69
11 Loop	CMA1505011PEX	$334.06
12 Loop	CMA1505012PEX	$364.43

2" Header	Return Part #	Return List Price Each
2 Loop	CMV2005002PEX	$84.24
3 Loop	CMV2005003PEX	$126.35
4 Loop	CMV2005004PEX	$168.47
5 Loop	CMV2005005PEX	$210.59
6 Loop	CMV2005006PEX	$252.71
7 Loop	CMV2005007PEX	$294.82
8 Loop	CMV2005008PEX	$336.94
9 Loop	CMV2005009PEX	$379.06
10 Loop	CMV2005010PEX	$421.18
11 Loop	CMV2005011PEX	$463.29
12 Loop	CMV2005012PEX	$505.41

Full Stick Available on Page 107

2" Header	Supply Part #	Supply List Price Each
2 Loop	CMA2005002PEX	$73.43
3 Loop	CMA2005003PEX	$110.15
4 Loop	CMA2005004PEX	$146.86
5 Loop	CMA2005005PEX	$183.58
6 Loop	CMA2005006PEX	$220.29
7 Loop	CMA2005007PEX	$257.01
8 Loop	CMA2005008PEX	$293.72
9 Loop	CMA2005009PEX	$330.44
10 Loop	CMA2005010PEX	$367.15
11 Loop	CMA2005011PEX	$403.87
12 Loop	CMA2005012PEX	$440.58

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" compression mini-ball valves for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" compression adaptors for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD Products

WSD 5/8" PEX COMPRESSION
ASTM F1807 COPPER MANIFOLDS FULL STICKS



Assembled in the USA with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 5/8" PEX Compression Mini Ball valves (ASTM F876/877 pipe)

Part Number	Description	Units Per Box	LIST Price each
CMV1005824PEX	1" x 5/8" Compex Valve	1	$1,052.77
CMV1255824PEX	1-1/4" x 5/8" Compex Valve	1	$1,107.57
CMV1505824PEX	1-1/2" x 5/8" Compex Valve	1	$1,165.32
CMV2005824PEX	2" x 5/8" Compex Valve	1	$1,317.65

WSD 5/8" PEX COMPRESSION
ASTM F1807 COPPER MANIFOLDS



Assembled in the USA with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 5/8" PEX Compression Adaptor (ASTM F876/877 pipe)

Part Number	Description	Units Per Box	LIST Price each
CMA1005824PEX	1" x 5/8" Compex	1	$908.56
CMA1255824PEX	1-1/4" x 5/8" Compex	1	$963.36
CMA1505824PEX	1-1/2" x 5/8" Compex	1	$1,021.11
CMA2005824PEX	2" x 5/8" Compex	1	$1,173.44

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 5/8" PEX COMPRESSION
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877



Number of Loops	PEX Compression Mini Ball Valve Manifold			Number of Loops	For ASTM F876/877 Pipe Adaptor Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1005802PEX	$87.73		2 Loop	CMA1005802PEX	$75.71
3 Loop	CMV1005803PEX	$131.60		3 Loop	CMA1005803PEX	$113.57
4 Loop	CMV1005804PEX	$175.46		4 Loop	CMA1005804PEX	$151.43
5 Loop	CMV1005805PEX	$219.33		5 Loop	CMA1005805PEX	$189.28
6 Loop	CMV1005806PEX	$263.19		6 Loop	CMA1005806PEX	$227.14
7 Loop	CMV1005807PEX	$307.06		7 Loop	CMA1005807PEX	$265.00
8 Loop	CMV1005808PEX	$350.92		8 Loop	CMA1005808PEX	$302.85
9 Loop	CMV1005809PEX	$394.79		9 Loop	CMA1005809PEX	$340.71
10 Loop	CMV1005810PEX	$438.65		10 Loop	CMA1005810PEX	$378.56
11 Loop	CMV1005811PEX	$482.52		11 Loop	CMA1005811PEX	$416.42
12 Loop	CMV1005812PEX	$526.38		12 Loop	CMA1005812PEX	$454.28

Full Stick Available on Page 110

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1255802PEX	$92.30		2 Loop	CMA1255802PEX	$80.28
3 Loop	CMV1255803PEX	$138.45		3 Loop	CMA1255803PEX	$120.42
4 Loop	CMV1255804PEX	$184.60		4 Loop	CMA1255804PEX	$160.56
5 Loop	CMV1255805PEX	$230.74		5 Loop	CMA1255805PEX	$200.70
6 Loop	CMV1255806PEX	$276.89		6 Loop	CMA1255806PEX	$240.84
7 Loop	CMV1255807PEX	$323.04		7 Loop	CMA1255807PEX	$280.98
8 Loop	CMV1255808PEX	$369.19		8 Loop	CMA1255808PEX	$321.12
9 Loop	CMV1255809PEX	$415.34		9 Loop	CMA1255809PEX	$361.26
10 Loop	CMV1255810PEX	$461.49		10 Loop	CMA1255810PEX	$401.40
11 Loop	CMV1255811PEX	$507.64		11 Loop	CMA1255811PEX	$441.54
12 Loop	CMV1255812PEX	$553.79		12 Loop	CMA1255812PEX	$481.68

Full Stick Available on Page 111

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" compression mini-ball valves for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" compression adaptors for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 5/8" PEX COMPRESSION
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877



Number of Loops	PEX Compression Mini Ball Valve Manifold			Number of Loops	For ASTM F876/877 Pipe Adaptor Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1505802PEX	$97.11		2 Loop	CMA1505802PEX	$85.09
3 Loop	CMV1505803PEX	$145.67		3 Loop	CMA1505803PEX	$127.64
4 Loop	CMV1505804PEX	$194.22		4 Loop	CMA1505804PEX	$170.18
5 Loop	CMV1505805PEX	$242.78		5 Loop	CMA1505805PEX	$212.73
6 Loop	CMV1505806PEX	$291.33		6 Loop	CMA1505806PEX	$255.28
7 Loop	CMV1505807PEX	$339.89		7 Loop	CMA1505807PEX	$297.82
8 Loop	CMV1505808PEX	$388.44		8 Loop	CMA1505808PEX	$340.37
9 Loop	CMV1505809PEX	$437.00		9 Loop	CMA1505809PEX	$382.92
10 Loop	CMV1505810PEX	$485.55		10 Loop	CMA1505810PEX	$425.06
11 Loop	CMV1505811PEX	$534.11		11 Loop	CMA1505811PEX	$468.01
12 Loop	CMV1505812PEX	$582.66		12 Loop	CMA1505812PEX	$510.55

Full Stick Available on Page 110

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	CMV2005802PEX	$109.80		2 Loop	CMA2005802PEX	$97.79
3 Loop	CMV2005803PEX	$164.71		3 Loop	CMA2005803PEX	$146.68
4 Loop	CMV2005804PEX	$219.61		4 Loop	CMA2005804PEX	$195.57
5 Loop	CMV2005805PEX	$274.51		5 Loop	CMA2005805PEX	$244.47
6 Loop	CMV2005806PEX	$329.41		6 Loop	CMA2005806PEX	$293.36
7 Loop	CMV2005807PEX	$384.31		7 Loop	CMA2005807PEX	$342.25
8 Loop	CMV2005808PEX	$439.22		8 Loop	CMA2005808PEX	$391.15
9 Loop	CMV2005809PEX	$494.12		9 Loop	CMA2005809PEX	$440.04
10 Loop	CMV2005810PEX	$549.02		10 Loop	CMA2005810PEX	$488.93
11 Loop	CMV2005811PEX	$603.92		11 Loop	CMA2005811PEX	$537.83
12 Loop	CMV2005812PEX	$658.83		12 Loop	CMA2005812PEX	$586.72

Full Stick Available on Page 110

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" compression mini-ball valves or adaptors for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" compression adaptors for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 3/4" PEX COMPRESSION
ASTM F1807 COPPER MANIFOLDS FULL STICKS



Assembled in the USA with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 3/4" PEX Compression Mini Ball valves (ASTM F876/877 pipe)

Part Number	Description	Units Per Box	LIST Price each
CMV1007524PEX	1" x 3/4" Compex Valve	1	$1,077.73
CMV1257524PEX	1-1/4" x 3/4" Compex Valve	1	$1,132.53
CMV1507524PEX	1-1/2" x 3/4" Compex Valve	1	$1,190.28
CMV2007524PEX	2" x 3/4" Compex Valve	1	$1,342.61

WSD 3/4" PEX COMPRESSION
ASTM F1807 COPPER MANIFOLDS



Assembled in the USA with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 3/4" PEX Compression Adaptor (ASTM F876/877 pipe)

Part Number	Description	Units Per Box	LIST Price each
CMA1007524PEX	1" x 3/4" Compex	1	$921.73
CMA1257524PEX	1-1/4" x 3/4" Compex	1	$976.53
CMA1507524PEX	1-1/2" x 3/4" Compex	1	$1,034.28
CMA2007524PEX	2" x 3/4" Compex	1	$1,186.61

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 3/4" PEX COMPRESSION
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877



Number of Loops	PEX Compression Mini Ball Valve Manifold			Number of Loops	For ASTM F876/877 Pipe Adaptor Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1007502PEX	$89.81		2 Loop	CMA1007502PEX	$76.81
3 Loop	CMV1007503PEX	$134.72		3 Loop	CMA1007503PEX	$115.22
4 Loop	CMV1007504PEX	$179.62		4 Loop	CMA1007504PEX	$153.62
5 Loop	CMV1007505PEX	$224.53		5 Loop	CMA1007505PEX	$192.03
6 Loop	CMV1007506PEX	$269.43		6 Loop	CMA1007506PEX	$230.43
7 Loop	CMV1007507PEX	$314.34		7 Loop	CMA1007507PEX	$268.84
8 Loop	CMV1007508PEX	$359.24		8 Loop	CMA1007508PEX	$307.24
9 Loop	CMV1007509PEX	$404.15		9 Loop	CMA1007509PEX	$345.65
10 Loop	CMV1007510PEX	$449.05		10 Loop	CMA1007510PEX	$384.05
11 Loop	CMV1007511PEX	$493.96		11 Loop	CMA1007511PEX	$422.46
12 Loop	CMV1007512PEX	$538.86		12 Loop	CMA1007512PEX	$460.86

Full Stick Available on Page 114

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1257502PEX	$94.38		2 Loop	CMA1257502PEX	$81.38
3 Loop	CMV1257503PEX	$141.57		3 Loop	CMA1257503PEX	$122.07
4 Loop	CMV1257504PEX	$188.76		4 Loop	CMA1257504PEX	$162.76
5 Loop	CMV1257505PEX	$235.94		5 Loop	CMA1257505PEX	$203.44
6 Loop	CMV1257506PEX	$283.13		6 Loop	CMA1257506PEX	$244.13
7 Loop	CMV1257507PEX	$330.32		7 Loop	CMA1257507PEX	$284.82
8 Loop	CMV1257508PEX	$377.51		8 Loop	CMA1257508PEX	$325.51
9 Loop	CMV1257509PEX	$424.70		9 Loop	CMA1257509PEX	$366.20
10 Loop	CMV1257510PEX	$471.89		10 Loop	CMA1257510PEX	$406.89
11 Loop	CMV1257511PEX	$519.08		11 Loop	CMA1257511PEX	$447.58
12 Loop	CMV1257512PEX	$566.27		12 Loop	CMA1257512PEX	$488.27

Full Stick Available on Page 114

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" compression mini-ball valves for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" compression adaptors for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 3/4" PEX COMPRESSION
for ASTM F1807 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

For Standard Pex Pipe ASTM F876/877



Number of Loops	PEX Compression Mini Ball Valve Manifold			Number of Loops	For ASTM F876/877 Pipe Adaptor Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1507502PEX	$99.19		2 Loop	CMA1507502PEX	$86.19
3 Loop	CMV1507503PEX	$148.79		3 Loop	CMA1507503PEX	$129.29
4 Loop	CMV1507504PEX	$198.38		4 Loop	CMA1507504PEX	$172.38
5 Loop	CMV1507505PEX	$247.98		5 Loop	CMA1507505PEX	$215.48
6 Loop	CMV1507506PEX	$297.57		6 Loop	CMA1507506PEX	$258.57
7 Loop	CMV1507507PEX	$347.17		7 Loop	CMA1507507PEX	$301.67
8 Loop	CMV1507508PEX	$396.76		8 Loop	CMA1507508PEX	$344.76
9 Loop	CMV1507509PEX	$446.36		9 Loop	CMA1507509PEX	$387.86
10 Loop	CMV1507510PEX	$495.95		10 Loop	CMA1507510PEX	$430.95
11 Loop	CMV1507511PEX	$545.55		11 Loop	CMA1507511PEX	$474.05
12 Loop	CMV1507512PEX	$595.14		12 Loop	CMA1507512PEX	$517.14

Full Stick Available on Page 114

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	CMV2007502PEX	$111.88		2 Loop	CMA2007502PEX	$98.88
3 Loop	CMV2007503PEX	$167.83		3 Loop	CMA2007503PEX	$148.33
4 Loop	CMV2007504PEX	$223.77		4 Loop	CMA2007504PEX	$197.77
5 Loop	CMV2007505PEX	$279.71		5 Loop	CMA2007505PEX	$247.21
6 Loop	CMV2007506PEX	$335.65		6 Loop	CMA2007506PEX	$296.65
7 Loop	CMV2007507PEX	$391.59		7 Loop	CMA2007507PEX	$346.09
8 Loop	CMV2007508PEX	$447.54		8 Loop	CMA2007508PEX	$395.54
9 Loop	CMV2007509PEX	$503.48		9 Loop	CMA2007509PEX	$444.98
10 Loop	CMV2007510PEX	$559.42		10 Loop	CMA2007510PEX	$494.42
11 Loop	CMV2007511PEX	$615.36		11 Loop	CMA2007511PEX	$543.86
12 Loop	CMV2007512PEX	$671.31		12 Loop	CMA2007512PEX	$593.31

Full Stick Available on Page 114

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" compression mini-ball valves or adaptors for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" compression adaptors for (ASTM F876/877) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

NOTES

www.willowsra.com
WSD
WISCONSIN • U.S.A.

F2080 EV Lock Pex Manifolds

PEX COLD EXPANSION AS PER ASTM F2080

– NOT PEX CRIMP –



ALL MANIFOLDS IN THE FOLLOWING SECTION ARE CONSIDERED SPECIAL ORDER AND CANNOT BE RETURNED.

ALL MANIFOLDS ALSO AVAILABLE UP TO 24 OUTLET 3" ON CENTER. CALL FOR PRICING

WSD Products

WSD 1" TO 2" X 1/2" PEX VALVE
FOR ASTM F2080 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
EV1005024PEX	1" X 1/2" VALVE	1	$655.58
EV1255024PEX	1 1/4" X 1/2 VALVE	1	$712.23
EV1505024PEX	1 1/2" X 1/2" VALVE	1	$766.31
EV2005024PEX	2" X 1/2" VALVE	1	$918.61

WSD 1" TO 2" X 1/2" PEX ADAPTER
FOR ASTM F2080 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
EA1005024PEX	1" X 1/2" ADAPT.	1	$451.04
EA1255024PEX	1 1/4" X 1/2 ADAPT.	1	$507.69
EA1505024PEX	1 1/2" X 1/2" ADAPT.	1	$561.77
EA2005024PEX	2" X 1/2" ADAPT.	1	$714.08

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 1/2" PEX EV
for ASTM F2080 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX EV F2080 Mini Ball Valve Manifold			Number of Loops	For ASTM F2080 Pipe Adapter Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	EV1005002PEX	$54.63		2 Loop	EA1005002PEX	$37.59
3 Loop	EV1005003PEX	$81.95		3 Loop	EA1005003PEX	$56.38
4 Loop	EV1005004PEX	$109.26		4 Loop	EA1005004PEX	$75.17
5 Loop	EV1005005PEX	$136.58		5 Loop	EA1005005PEX	$93.97
6 Loop	EV1005006PEX	$163.89		6 Loop	EA1005006PEX	$112.76
7 Loop	EV1005007PEX	$191.21		7 Loop	EA1005007PEX	$131.55
8 Loop	EV1005008PEX	$218.53		8 Loop	EA1005008PEX	$150.35
9 Loop	EV1005009PEX	$245.84		9 Loop	EA1005009PEX	$169.14
10 Loop	EV1005010PEX	$273.16		10 Loop	EA1005010PEX	$187.93
11 Loop	EV1005011PEX	$300.47		11 Loop	EA1005011PEX	$206.73
12 Loop	EV1005012PEX	$327.79		12 Loop	EA1005012PEX	$225.52

Full Stick Available on Page 118

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	EV1255002PEX	$59.35		2 Loop	EA1255002PEX	$42.31
3 Loop	EV1255003PEX	$89.03		3 Loop	EA1255003PEX	$63.46
4 Loop	EV1255004PEX	$118.70		4 Loop	EA1255004PEX	$84.62
5 Loop	EV1255005PEX	$148.38		5 Loop	EA1255005PEX	$105.77
6 Loop	EV1255006PEX	$178.06		6 Loop	EA1255006PEX	$126.92
7 Loop	EV1255007PEX	$207.73		7 Loop	EA1255007PEX	$148.08
8 Loop	EV1255008PEX	$237.41		8 Loop	EA1255008PEX	$169.23
9 Loop	EV1255009PEX	$267.09		9 Loop	EA1255009PEX	$190.39
10 Loop	EV1255010PEX	$296.76		10 Loop	EA1255010PEX	$211.54
11 Loop	EV1255011PEX	$326.44		11 Loop	EA1255011PEX	$232.69
12 Loop	EV1255012PEX	$356.11		12 Loop	EA1255012PEX	$253.85

Full Stick Available on Page 118

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" Dahl EV mini-ball valves or Everloc adaptors for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" Everloc adaptors for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" PEX EV

for ASTM F2080 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX EV F2080 Mini Ball Valve Manifold			Number of Loops	For ASTM F2080 Pipe Adapter Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	EV1505002PEX	$63.86		2 Loop	EA1505002PEX	$46.81
3 Loop	EV1505003PEX	$95.79		3 Loop	EA1505003PEX	$70.22
4 Loop	EV1505004PEX	$127.72		4 Loop	EA1505004PEX	$93.63
5 Loop	EV1505005PEX	$159.65		5 Loop	EA1505005PEX	$117.04
6 Loop	EV1505006PEX	$191.58		6 Loop	EA1505006PEX	$140.44
7 Loop	EV1505007PEX	$223.51		7 Loop	EA1505007PEX	$163.85
8 Loop	EV1505008PEX	$255.44		8 Loop	EA1505008PEX	$187.26
9 Loop	EV1505009PEX	$287.37		9 Loop	EA1505009PEX	$210.67
10 Loop	EV1505010PEX	$319.29		10 Loop	EA1505010PEX	$234.07
11 Loop	EV1505011PEX	$351.22		11 Loop	EA1505011PEX	$257.48
12 Loop	EV1505012PEX	$383.15		12 Loop	EA1505012PEX	$280.89

Full Stick Available on Page 118

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	EV2005002PEX	$76.55		2 Loop	EA2005002PEX	$59.51
3 Loop	EV2005003PEX	$114.83		3 Loop	EA2005003PEX	$89.26
4 Loop	EV2005004PEX	$153.10		4 Loop	EA2005004PEX	$119.01
5 Loop	EV2005005PEX	$191.38		5 Loop	EA2005005PEX	$148.77
6 Loop	EV2005006PEX	$229.65		6 Loop	EA2005006PEX	$178.52
7 Loop	EV2005007PEX	$267.93		7 Loop	EA2005007PEX	$208.27
8 Loop	EV2005008PEX	$306.20		8 Loop	EA2005008PEX	$238.03
9 Loop	EV2005009PEX	$344.48		9 Loop	EA2005009PEX	$267.78
10 Loop	EV2005010PEX	$382.75		10 Loop	EA2005010PEX	$297.53
11 Loop	EV2005011PEX	$421.03		11 Loop	EA2005011PEX	$327.28
12 Loop	EV2005012PEX	$459.30		12 Loop	EA2005012PEX	$357.04

Full Stick Available on Page 118

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads,, 1/2" drops at 3" OC, with 1/2" Dahl EV mini-ball valves for (ASTM F2080) soldered on.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads,, 1/2" drops at 3" OC, with 1/2" Everloc adaptors for (ASTM F2080) soldered on.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" TO 2" X 5/8" PEX VALVE
FOR ASTM F2080 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
EV1005824PEX	1" X 5/8" VALVE	1	$930.05
EV1255824PEX	1 1/4" X 5/8" VALVE	1	$984.85
EV1505824PEX	1 1/2" X 5/8" VALVE	1	$1,042.60
EV2005824PEX	2" X 5/8" VALVE	1	$1,194.93

WSD 1" TO 2" X 5/8" PEX ADAPTER
FOR ASTM F2080 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
EA1005824PEX	1" X 5/8" ADAPT.	1	$777.52
EA1255824PEX	1 1/4" X 5/8" ADAPT.	1	$832.32
EA1505824PEX	1 1/2" X 5/8" ADAPT.	1	$890.07
EA2005824PEX	2" X 5/8" ADAPT.	1	$1,042.40

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 5/8" PEX EV
for ASTM F2080 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX EV F2080 Mini Ball Valve Manifold			Number of Loops	For ASTM F2080 Pipe Adapter Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	EV1005802PEX	$77.50		2 Loop	EA1005802PEX	$64.79
3 Loop	EV1005803PEX	$116.26		3 Loop	EA1005803PEX	$97.19
4 Loop	EV1005804PEX	$155.01		4 Loop	EA1005804PEX	$129.59
5 Loop	EV1005805PEX	$193.76		5 Loop	EA1005805PEX	$161.98
6 Loop	EV1005806PEX	$232.51		6 Loop	EA1005806PEX	$194.38
7 Loop	EV1005807PEX	$271.26		7 Loop	EA1005807PEX	$226.78
8 Loop	EV1005808PEX	$310.02		8 Loop	EA1005808PEX	$259.17
9 Loop	EV1005809PEX	$348.77		9 Loop	EA1005809PEX	$291.57
10 Loop	EV1005810PEX	$387.52		10 Loop	EA1005810PEX	$323.96
11 Loop	EV1005811PEX	$426.27		11 Loop	EA1005811PEX	$356.36
12 Loop	EV1005812PEX	$465.02		12 Loop	EA1005812PEX	$388.76

Full Stick Available on Page 121

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	EV1255802PEX	$82.07		2 Loop	EA1255802PEX	$69.36
3 Loop	EV1255803PEX	$123.11		3 Loop	EA1255803PEX	$104.04
4 Loop	EV1255804PEX	$164.14		4 Loop	EA1255804PEX	$138.72
5 Loop	EV1255805PEX	$205.18		5 Loop	EA1255805PEX	$173.40
6 Loop	EV1255806PEX	$246.21		6 Loop	EA1255806PEX	$208.08
7 Loop	EV1255807PEX	$287.25		7 Loop	EA1255807PEX	$242.76
8 Loop	EV1255808PEX	$328.28		8 Loop	EA1255808PEX	$277.44
9 Loop	EV1255809PEX	$369.32		9 Loop	EA1255809PEX	$312.12
10 Loop	EV1255810PEX	$410.35		10 Loop	EA1255810PEX	$346.80
11 Loop	EV1255811PEX	$451.39		11 Loop	EA1255811PEX	$381.48
12 Loop	EV1255812PEX	$492.43		12 Loop	EA1255812PEX	$416.16

Full Stick Available on Page 121

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" Dahl EV mini-ball valves for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" Everloc adaptors for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 5/8" PEX EV
for ASTM F2080 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops 1-1/2" Header	PEX EV F2080 Mini Ball Valve Manifold Return Part #	Return List Price Each		Number of Loops 1-1/2" Header	For ASTM F2080 Pipe Adapter Manifold Supply Part #	Supply List Price Each
2 Loop	EV1505802PEX	$86.88		2 Loop	EA1505802PEX	$74.17
3 Loop	EV1505803PEX	$130.33		3 Loop	EA1505803PEX	$111.26
4 Loop	EV1505804PEX	$173.77		4 Loop	EA1505804PEX	$148.34
5 Loop	EV1505805PEX	$217.21		5 Loop	EA1505805PEX	$185.43
6 Loop	EV1505806PEX	$260.65		6 Loop	EA1505806PEX	$222.52
7 Loop	EV1505807PEX	$304.09		7 Loop	EA1505807PEX	$259.60
8 Loop	EV1505808PEX	$347.53		8 Loop	EA1505808PEX	$296.69
9 Loop	EV1505809PEX	$390.98		9 Loop	EA1505809PEX	$333.78
10 Loop	EV1505810PEX	$434.42		10 Loop	EA1505810PEX	$370.86
11 Loop	EV1505811PEX	$477.86		11 Loop	EA1505811PEX	$407.95
12 Loop	EV1505812PEX	$521.30		12 Loop	EA1505812PEX	$445.03

Full Stick Available on Page 121

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	EV2005802PEX	$99.58		2 Loop	EA2005802PEX	$86.87
3 Loop	EV2005803PEX	$149.37		3 Loop	EA2005803PEX	$130.30
4 Loop	EV2005804PEX	$199.16		4 Loop	EA2005804PEX	$173.73
5 Loop	EV2005805PEX	$248.94		5 Loop	EA2005805PEX	$217.17
6 Loop	EV2005806PEX	$298.73		6 Loop	EA2005806PEX	$260.60
7 Loop	EV2005807PEX	$348.52		7 Loop	EA2005807PEX	$304.03
8 Loop	EV2005808PEX	$398.31		8 Loop	EA2005808PEX	$347.47
9 Loop	EV2005809PEX	$448.10		9 Loop	EA2005809PEX	$390.90
10 Loop	EV2005810PEX	$497.89		10 Loop	EA2005810PEX	$434.33
11 Loop	EV2005811PEX	$547.68		11 Loop	EA2005811PEX	$477.77
12 Loop	EV2005812PEX	$597.47		12 Loop	EA2005812PEX	$521.20

Full Stick Available on Page 121

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads,, 3/4" drops at 3" OC, with 5/8" Dahl EV mini-ball valves for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" Everloc adaptors for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD Products

WSD 1" TO 2" X 3/4" PEX VALVE
FOR ASTM F2080 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
EV1007524PEX	1" X 3/4" VALVE	1	$946.69
EV1257524PEX	1 1/4" X 3/4" VALVE	1	$1,001.49
EV1507524PEX	1 1/2" X 3/4" VALVE	1	$1,059.24
EV2007524PEX	2" X 3/4" VALVE	1	$1,211.57

WSD 1" TO 2" X 3/4" PEX ADAPTER
FOR ASTM F2080 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
EA1007524PEX	1" X 3/4" ADAPT.	1	$507.81
EA1257524PEX	1 1/4" X 3/4" ADAPT.	1	$562.61
EA1507524PEX	1 1/2" X 3/4" ADAPT.	1	$620.36
EA2007524PEX	2" X 3/4" ADAPT.	1	$772.69

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 3/4" PEX EV
for ASTM F2080 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX EV F2080 Mini Ball Valve Manifold			Number of Loops	For ASTM F2080 Pipe Adapter Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	EV1007502PEX	$78.89		2 Loop	EA1007502PEX	$42.32
3 Loop	EV1007503PEX	$118.34		3 Loop	EA1007503PEX	$63.48
4 Loop	EV1007504PEX	$157.78		4 Loop	EA1007504PEX	$84.63
5 Loop	EV1007505PEX	$197.23		5 Loop	EA1007505PEX	$105.79
6 Loop	EV1007506PEX	$236.67		6 Loop	EA1007506PEX	$126.95
7 Loop	EV1007507PEX	$276.12		7 Loop	EA1007507PEX	$148.11
8 Loop	EV1007508PEX	$315.56		8 Loop	EA1007508PEX	$169.27
9 Loop	EV1007509PEX	$355.01		9 Loop	EA1007509PEX	$190.43
10 Loop	EV1007510PEX	$394.45		10 Loop	EA1007510PEX	$211.59
11 Loop	EV1007511PEX	$433.90		11 Loop	EA1007511PEX	$232.75
12 Loop	EV1007512PEX	$473.34		12 Loop	EA1007512PEX	$253.90

Full Stick Available on Page 124

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	EV1257502PEX	$83.46		2 Loop	EA1257502PEX	$46.88
3 Loop	EV1257503PEX	$125.19		3 Loop	EA1257503PEX	$70.33
4 Loop	EV1257504PEX	$166.92		4 Loop	EA1257504PEX	$93.77
5 Loop	EV1257505PEX	$208.64		5 Loop	EA1257505PEX	$117.21
6 Loop	EV1257506PEX	$250.37		6 Loop	EA1257506PEX	$140.65
7 Loop	EV1257507PEX	$292.10		7 Loop	EA1257507PEX	$164.09
8 Loop	EV1257508PEX	$333.83		8 Loop	EA1257508PEX	$187.54
9 Loop	EV1257509PEX	$375.56		9 Loop	EA1257509PEX	$210.98
10 Loop	EV1257510PEX	$417.29		10 Loop	EA1257510PEX	$234.42
11 Loop	EV1257511PEX	$459.02		11 Loop	EA1257511PEX	$257.86
12 Loop	EV1257512PEX	$500.75		12 Loop	EA1257512PEX	$281.31

Full Stick Available on Page 124

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" Dahl EV mini-ball valves for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" Everloc adaptors for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 3/4" PEX EV
for ASTM F2080 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX EV F2080 Mini Ball Valve Manifold			Number of Loops	For ASTM F2080 Pipe Adapter Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	EV1507502PEX	$88.27		2 Loop	EA1507502PEX	$51.70
3 Loop	EV1507503PEX	$132.41		3 Loop	EA1507503PEX	$77.55
4 Loop	EV1507504PEX	$176.54		4 Loop	EA1507504PEX	$103.39
5 Loop	EV1507505PEX	$220.68		5 Loop	EA1507505PEX	$129.24
6 Loop	EV1507506PEX	$264.81		6 Loop	EA1507506PEX	$155.09
7 Loop	EV1507507PEX	$308.95		7 Loop	EA1507507PEX	$180.94
8 Loop	EV1507508PEX	$353.08		8 Loop	EA1507508PEX	$206.79
9 Loop	EV1507509PEX	$397.22		9 Loop	EA1507509PEX	$232.64
10 Loop	EV1507510PEX	$441.35		10 Loop	EA1507510PEX	$258.48
11 Loop	EV1507511PEX	$485.49		11 Loop	EA1507511PEX	$284.33
12 Loop	EV1507512PEX	$529.62		12 Loop	EA1507512PEX	$310.18

Full Stick Available on Page 124

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	EV2007502PEX	$100.96		2 Loop	EA2007502PEX	$64.39
3 Loop	EV2007503PEX	$151.45		3 Loop	EA2007503PEX	$96.59
4 Loop	EV2007504PEX	$201.93		4 Loop	EA2007504PEX	$128.78
5 Loop	EV2007505PEX	$252.41		5 Loop	EA2007505PEX	$160.98
6 Loop	EV2007506PEX	$302.89		6 Loop	EA2007506PEX	$193.17
7 Loop	EV2007507PEX	$353.37		7 Loop	EA2007507PEX	$225.37
8 Loop	EV2007508PEX	$403.86		8 Loop	EA2007508PEX	$257.56
9 Loop	EV2007509PEX	$454.34		9 Loop	EA2007509PEX	$289.76
10 Loop	EV2007510PEX	$504.82		10 Loop	EA2007510PEX	$321.95
11 Loop	EV2007511PEX	$555.30		11 Loop	EA2007511PEX	$354.15
12 Loop	EV2007512PEX	$605.79		12 Loop	EA2007512PEX	$386.35

Full Stick Available on Page 124

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads,, 3/4" drops at 3" OC, with 3/4" Dahl EV mini-ball valves for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" Everloc adaptors for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

F1960 Pro Pex Manifolds

PEX COLD EXPANSION AS PER ASTM F1960



ALL MANIFOLDS IN THE FOLLOWING SECTION ARE CONSIDERED SPECIAL ORDER AND CANNOT BE RETURNED.

ALL MANIFOLDS ALSO AVAILABLE UP TO 24 OUTLET 3" ON CENTER. CALL FOR PRICING

WSD Products

WSD 1" TO 2" X 1/2" PEX VALVE
FOR ASTM F1960 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
PRPXV1005024PEX	1" X 1/2" VALVE	1	$742.94
PRPXV1255024PEX	1 1/4" X 1/2" VALVE	1	$799.59
PRPXV1505024PEX	1 1/2" X 1/2" VALVE	1	$853.67
PRPXV2005024PEX	2" X 1/2" VALVE	1	$1,005.97

WSD 1" TO 2" X 1/2" PEX ADAPTER
FOR ASTM F1960 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
PRPXA1005024PEX	1" X 1/2" ADAPT.	1	$422.62
PRPXA1255024PEX	1 1/4" X 1/2" ADAPT.	1	$479.27
PRPXA1505024PEX	1 1/2" X 1/2" ADAPT.	1	$533.35
PRPXA2005024PEX	2" X 1/2" ADAPT.	1	$685.65

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 1/2" PRO PEX
for ASTM F1960 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX PRPX F1960 Mini Ball Valve Manifold			Number of Loops	For ASTM F1960 Pipe Adapter Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1005002PEX	$61.91		2 Loop	PRPXA1005002PEX	$35.22
3 Loop	PRPXV1005003PEX	$92.87		3 Loop	PRPXA1005003PEX	$52.83
4 Loop	PRPXV1005004PEX	$123.82		4 Loop	PRPXA1005004PEX	$70.44
5 Loop	PRPXV1005005PEX	$154.78		5 Loop	PRPXA1005005PEX	$88.04
6 Loop	PRPXV1005006PEX	$185.73		6 Loop	PRPXA1005006PEX	$105.65
7 Loop	PRPXV1005007PEX	$216.69		7 Loop	PRPXA1005007PEX	$123.26
8 Loop	PRPXV1005008PEX	$247.65		8 Loop	PRPXA1005008PEX	$140.87
9 Loop	PRPXV1005009PEX	$278.60		9 Loop	PRPXA1005009PEX	$158.48
10 Loop	PRPXV1005010PEX	$309.56		10 Loop	PRPXA1005010PEX	$176.09
11 Loop	PRPXV1005011PEX	$340.51		11 Loop	PRPXA1005011PEX	$193.70
12 Loop	PRPXV1005012PEX	$371.47		12 Loop	PRPXA1005012PEX	$211.31

Full Stick Available on Page 128

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1255002PEX	$66.63		2 Loop	PRPXA1255002PEX	$39.94
3 Loop	PRPXV1255003PEX	$99.95		3 Loop	PRPXA1255003PEX	$59.91
4 Loop	PRPXV1255004PEX	$133.26		4 Loop	PRPXA1255004PEX	$79.88
5 Loop	PRPXV1255005PEX	$166.58		5 Loop	PRPXA1255005PEX	$99.85
6 Loop	PRPXV1255006PEX	$199.90		6 Loop	PRPXA1255006PEX	$119.82
7 Loop	PRPXV1255007PEX	$233.21		7 Loop	PRPXA1255007PEX	$139.79
8 Loop	PRPXV1255008PEX	$266.53		8 Loop	PRPXA1255008PEX	$159.76
9 Loop	PRPXV1255009PEX	$299.85		9 Loop	PRPXA1255009PEX	$179.73
10 Loop	PRPXV1255010PEX	$333.16		10 Loop	PRPXA1255010PEX	$199.69
11 Loop	PRPXV1255011PEX	$366.48		11 Loop	PRPXA1255011PEX	$219.66
12 Loop	PRPXV1255012PEX	$399.79		12 Loop	PRPXA1255012PEX	$239.63

Full Stick Available on Page 128

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" Dahl Expansion mini-ball valves for (ASTM F1960) soldered on.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" Pro Pex adaptors for (ASTM F1960) soldered on.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 1/2" PRO PEX
for ASTM F1960 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX PRPX F1960 Mini Ball Valve Manifold			Number of Loops	For ASTM F1960 Pipe Adapter Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1505002PEX	$71.14		2 Loop	PRPXA1505002PEX	$44.45
3 Loop	PRPXV1505003PEX	$106.71		3 Loop	PRPXA1505003PEX	$66.67
4 Loop	PRPXV1505004PEX	$142.28		4 Loop	PRPXA1505004PEX	$88.89
5 Loop	PRPXV1505005PEX	$177.85		5 Loop	PRPXA1505005PEX	$111.11
6 Loop	PRPXV1505006PEX	$213.42		6 Loop	PRPXA1505006PEX	$133.34
7 Loop	PRPXV1505007PEX	$248.99		7 Loop	PRPXA1505007PEX	$155.56
8 Loop	PRPXV1505008PEX	$284.56		8 Loop	PRPXA1505008PEX	$177.78
9 Loop	PRPXV1505009PEX	$320.13		9 Loop	PRPXA1505009PEX	$200.01
10 Loop	PRPXV1505010PEX	$355.69		10 Loop	PRPXA1505010PEX	$222.23
11 Loop	PRPXV1505011PEX	$391.26		11 Loop	PRPXA1505011PEX	$244.45
12 Loop	PRPXV1505012PEX	$426.83		12 Loop	PRPXA1505012PEX	$266.67

Full Stick Available on Page 128

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV2005002PEX	$83.83		2 Loop	PRPXA2005002PEX	$57.14
3 Loop	PRPXV2005003PEX	$125.75		3 Loop	PRPXA2005003PEX	$85.71
4 Loop	PRPXV2005004PEX	$167.66		4 Loop	PRPXA2005004PEX	$114.27
5 Loop	PRPXV2005005PEX	$209.58		5 Loop	PRPXA2005005PEX	$142.84
6 Loop	PRPXV2005006PEX	$251.49		6 Loop	PRPXA2005006PEX	$171.41
7 Loop	PRPXV2005007PEX	$293.41		7 Loop	PRPXA2005007PEX	$199.98
8 Loop	PRPXV2005008PEX	$335.32		8 Loop	PRPXA2005008PEX	$228.55
9 Loop	PRPXV2005009PEX	$377.24		9 Loop	PRPXA2005009PEX	$257.12
10 Loop	PRPXV2005010PEX	$419.15		10 Loop	PRPXA2005010PEX	$285.69
11 Loop	PRPXV2005011PEX	$461.07		11 Loop	PRPXA2005011PEX	$314.26
12 Loop	PRPXV2005012PEX	$502.98		12 Loop	PRPXA2005012PEX	$342.82

Full Stick Available on Page 128

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" Pro Pex adaptors for (ASTM F1960) soldered on.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" Pro Pex adaptors for (ASTM F2080) soldered on. Also available 13-23 outlets, call for pricing. These may be coupled.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" TO 2" X 5/8" PEX VALVE
FOR ASTM F1960 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
PRPXV1005824PEX	1" X 5/8" VALVE	1	$1,009.09
PRPXV1255824PEX	1 1/4" X 5/8" VALVE	1	$1,063.89
PRPXV1505824PEX	1 1/2" X 5/8" VALVE	1	$1,121.64
PRPXV2005824PEX	2" X 5/8" VALVE	1	$1,273.97

WSD 1" TO 2" X 5/8" PEX ADAPTER
FOR ASTM F1960 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
PRPXA1005824PEX	1" X 5/8" ADAPT.	1	$580.61
PRPXA1255824PEX	1 1/4" X 5/8" ADAPT.	1	$635.41
PRPXA1505824PEX	1 1/2" X 5/8" ADAPT.	1	$693.16
PRPXA2005824PEX	2" X 5/8" ADAPT.	1	$845.49

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 5/8" PRO PEX
for ASTM F1960 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX PRPX F1960 Mini Ball Valve Manifold			Number of Loops	For ASTM F1960 Pipe Adapter Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1005802PEX	$84.09		2 Loop	PRPXA1005802PEX	$48.38
3 Loop	PRPXV1005803PEX	$126.14		3 Loop	PRPXA1005803PEX	$72.58
4 Loop	PRPXV1005804PEX	$168.18		4 Loop	PRPXA1005804PEX	$96.77
5 Loop	PRPXV1005805PEX	$210.23		5 Loop	PRPXA1005805PEX	$120.96
6 Loop	PRPXV1005806PEX	$252.27		6 Loop	PRPXA1005806PEX	$145.15
7 Loop	PRPXV1005807PEX	$294.32		7 Loop	PRPXA1005807PEX	$169.34
8 Loop	PRPXV1005808PEX	$336.36		8 Loop	PRPXA1005808PEX	$193.54
9 Loop	PRPXV1005809PEX	$378.41		9 Loop	PRPXA1005809PEX	$217.73
10 Loop	PRPXV1005810PEX	$420.45		10 Loop	PRPXA1005810PEX	$241.92
11 Loop	PRPXV1005811PEX	$462.50		11 Loop	PRPXA1005811PEX	$266.11
12 Loop	PRPXV1005812PEX	$504.54		12 Loop	PRPXA1005812PEX	$290.30

Full Stick Available on Page 131

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1255802PEX	$88.66		2 Loop	PRPXA1255802PEX	$52.95
3 Loop	PRPXV1255803PEX	$132.99		3 Loop	PRPXA1255803PEX	$79.43
4 Loop	PRPXV1255804PEX	$177.32		4 Loop	PRPXA1255804PEX	$105.90
5 Loop	PRPXV1255805PEX	$221.64		5 Loop	PRPXA1255805PEX	$132.38
6 Loop	PRPXV1255806PEX	$265.97		6 Loop	PRPXA1255806PEX	$158.85
7 Loop	PRPXV1255807PEX	$310.30		7 Loop	PRPXA1255807PEX	$185.33
8 Loop	PRPXV1255808PEX	$354.63		8 Loop	PRPXA1255808PEX	$211.80
9 Loop	PRPXV1255809PEX	$398.96		9 Loop	PRPXA1255809PEX	$238.28
10 Loop	PRPXV1255810PEX	$443.29		10 Loop	PRPXA1255810PEX	$264.75
11 Loop	PRPXV1255811PEX	$487.62		11 Loop	PRPXA1255811PEX	$291.23
12 Loop	PRPXV1255812PEX	$531.95		12 Loop	PRPXA1255812PEX	$317.71

Full Stick Available on Page 131

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" Dahl Expansion mini-ball valves for (ASTM F1960) soldered on.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC, with 5/8" Pro Pex adaptors for(ASTM F1960) soldered on.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 5/8" PRO PEX
for ASTM F1960 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX PRPX F1960 Mini Ball Valve Manifold			Number of Loops	For ASTM F1960 Pipe Adapter Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1505802PEX	$93.47		2 Loop	PRPXA1505802PEX	$57.76
3 Loop	PRPXV1505803PEX	$140.21		3 Loop	PRPXA1505803PEX	$86.65
4 Loop	PRPXV1505804PEX	$186.94		4 Loop	PRPXA1505804PEX	$115.53
5 Loop	PRPXV1505805PEX	$233.68		5 Loop	PRPXA1505805PEX	$144.41
6 Loop	PRPXV1505806PEX	$280.41		6 Loop	PRPXA1505806PEX	$173.29
7 Loop	PRPXV1505807PEX	$327.15		7 Loop	PRPXA1505807PEX	$202.17
8 Loop	PRPXV1505808PEX	$373.88		8 Loop	PRPXA1505808PEX	$231.05
9 Loop	PRPXV1505809PEX	$420.62		9 Loop	PRPXA1505809PEX	$259.94
10 Loop	PRPXV1505810PEX	$467.35		10 Loop	PRPXA1505810PEX	$288.82
11 Loop	PRPXV1505811PEX	$514.09		11 Loop	PRPXA1505811PEX	$317.70
12 Loop	PRPXV1505812PEX	$560.82		12 Loop	PRPXA1505812PEX	$346.58

Full Stick Available on Page 131

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV2005802PEX	$106.16		2 Loop	PRPXA2005802PEX	$70.46
3 Loop	PRPXV2005803PEX	$159.25		3 Loop	PRPXA2005803PEX	$105.69
4 Loop	PRPXV2005804PEX	$212.33		4 Loop	PRPXA2005804PEX	$140.92
5 Loop	PRPXV2005805PEX	$265.41		5 Loop	PRPXA2005805PEX	$176.14
6 Loop	PRPXV2005806PEX	$318.49		6 Loop	PRPXA2005806PEX	$211.37
7 Loop	PRPXV2005807PEX	$371.57		7 Loop	PRPXA2005807PEX	$246.60
8 Loop	PRPXV2005808PEX	$424.66		8 Loop	PRPXA2005808PEX	$281.83
9 Loop	PRPXV2005809PEX	$477.74		9 Loop	PRPXA2005809PEX	$317.06
10 Loop	PRPXV2005810PEX	$530.82		10 Loop	PRPXA2005810PEX	$352.29
11 Loop	PRPXV2005811PEX	$583.90		11 Loop	PRPXA2005811PEX	$387.52
12 Loop	PRPXV2005812PEX	$636.99		12 Loop	PRPXA2005812PEX	$422.75

Full Stick Available on Page 131

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" Dahl Expansion mini-ball valves for (ASTM F1960) soldered on.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC, with 5/8" Pro Pex adaptors for (ASTM F1960) soldered on.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD Products

WSD 1" TO 2" X 3/4" PEX VALVE
FOR ASTM F1960 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
PRPXV1007524PEX	1" X 3/4" VALVE	1	$1,079.12
PRPXV1257524PEX	1 1/4" X 3/4" VALVE	1	$1,133.92
PRPXV1507524PEX	1 1/2" X 3/4" VALVE	1	$1,191.67
PRPXV2007524PEX	2" X 3/4" VALVE	1	$1,344.00

WSD 1" TO 2" X 3/4" PEX ADAPTER
FOR ASTM F1960 COPPER MANIFOLDS OPEN BOTH ENDS



Assembled in the USA with foreign and domestic parts

Fittings require a cold expansion tool.

72" Long | 24 Outlets, 3" On Center

Part Number	Description	Units Per Box	LIST Price each
PRPXA1007524PEX	1" X 3/4" ADAPT.	1	$532.77
PRPXA1257524PEX	1 1/4" X 3/4" ADAPT.	1	$587.57
PRPXA1507524PEX	1 1/2" X 3/4" ADAPT.	1	$645.32
PRPXA2007524PEX	2" X 3/4" ADAPT.	1	$797.65

All full sticks are available in cut to length sizes. Take the single unit price and divide by 24 to get the price per outlet. Then multiply that number by the number of outlets you wish to buy.

Please call our office with any questions. 715-253-3010

All the items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 3/4" PRO PEX
for ASTM F1960 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX PRPX F1960 Mini Ball Valve Manifold			Number of Loops	For ASTM F1960 Pipe Adapter Manifold	
1" Header	Return Part #	Return List Price Each		1" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1007502PEX	$89.93		2 Loop	PRPXA1007502PEX	$44.40
3 Loop	PRPXV1007503PEX	$134.89		3 Loop	PRPXA1007503PEX	$66.60
4 Loop	PRPXV1007504PEX	$179.85		4 Loop	PRPXA1007504PEX	$88.79
5 Loop	PRPXV1007505PEX	$224.82		5 Loop	PRPXA1007505PEX	$110.99
6 Loop	PRPXV1007506PEX	$269.78		6 Loop	PRPXA1007506PEX	$133.19
7 Loop	PRPXV1007507PEX	$314.74		7 Loop	PRPXA1007507PEX	$155.39
8 Loop	PRPXV1007508PEX	$359.71		8 Loop	PRPXA1007508PEX	$177.59
9 Loop	PRPXV1007509PEX	$404.67		9 Loop	PRPXA1007509PEX	$199.79
10 Loop	PRPXV1007510PEX	$449.63		10 Loop	PRPXA1007510PEX	$221.99
11 Loop	PRPXV1007511PEX	$494.59		11 Loop	PRPXA1007511PEX	$244.19
12 Loop	PRPXV1007512PEX	$539.56		12 Loop	PRPXA1007512PEX	$266.38

Full Stick Available on Page 134

1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1257502PEX	$94.49		2 Loop	PRPXA1257502PEX	$48.96
3 Loop	PRPXV1257503PEX	$141.74		3 Loop	PRPXA1257503PEX	$73.45
4 Loop	PRPXV1257504PEX	$188.99		4 Loop	PRPXA1257504PEX	$97.93
5 Loop	PRPXV1257505PEX	$236.23		5 Loop	PRPXA1257505PEX	$122.41
6 Loop	PRPXV1257506PEX	$283.48		6 Loop	PRPXA1257506PEX	$146.89
7 Loop	PRPXV1257507PEX	$330.73		7 Loop	PRPXA1257507PEX	$171.37
8 Loop	PRPXV1257508PEX	$377.97		8 Loop	PRPXA1257508PEX	$195.86
9 Loop	PRPXV1257509PEX	$425.22		9 Loop	PRPXA1257509PEX	$220.34
10 Loop	PRPXV1257510PEX	$472.47		10 Loop	PRPXA1257510PEX	$244.82
11 Loop	PRPXV1257511PEX	$519.71		11 Loop	PRPXA1257511PEX	$269.30
12 Loop	PRPXV1257512PEX	$566.96		12 Loop	PRPXA1257512PEX	$293.79

Full Stick Available on Page 134

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" Dahl Expansion mini-ball valves for (ASTM F1960) soldered on.

Supply Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC, with 3/4" Uponor Pro Pex adaptors.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 3/4" PRO PEX
for ASTM F1960 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts

Fittings require a cold expansion tool.



Number of Loops	PEX PRPX F1960 Mini Ball Valve Manifold			Number of Loops	For ASTM F1960 Pipe Adapter Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV1507502PEX	$99.31		2 Loop	PRPXA1507502PEX	$53.78
3 Loop	PRPXV1507503PEX	$148.96		3 Loop	PRPXA1507503PEX	$80.67
4 Loop	PRPXV1507504PEX	$198.61		4 Loop	PRPXA1507504PEX	$107.55
5 Loop	PRPXV1507505PEX	$248.26		5 Loop	PRPXA1507505PEX	$134.44
6 Loop	PRPXV1507506PEX	$297.92		6 Loop	PRPXA1507506PEX	$161.33
7 Loop	PRPXV1507507PEX	$347.57		7 Loop	PRPXA1507507PEX	$188.22
8 Loop	PRPXV1507508PEX	$397.22		8 Loop	PRPXA1507508PEX	$215.11
9 Loop	PRPXV1507509PEX	$446.88		9 Loop	PRPXA1507509PEX	$242.00
10 Loop	PRPXV1507510PEX	$496.53		10 Loop	PRPXA1507510PEX	$268.88
11 Loop	PRPXV1507511PEX	$546.18		11 Loop	PRPXA1507511PEX	$295.77
12 Loop	PRPXV1507512PEX	$595.83		12 Loop	PRPXA1507512PEX	$322.66

Full Stick Available on Page 134

2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	PRPXV2007502PEX	$112.00		2 Loop	PRPXA2007502PEX	$66.47
3 Loop	PRPXV2007503PEX	$168.00		3 Loop	PRPXA2007503PEX	$99.71
4 Loop	PRPXV2007504PEX	$224.00		4 Loop	PRPXA2007504PEX	$132.94
5 Loop	PRPXV2007505PEX	$280.00		5 Loop	PRPXA2007505PEX	$166.18
6 Loop	PRPXV2007506PEX	$336.00		6 Loop	PRPXA2007506PEX	$199.41
7 Loop	PRPXV2007507PEX	$392.00		7 Loop	PRPXA2007507PEX	$232.65
8 Loop	PRPXV2007508PEX	$448.00		8 Loop	PRPXA2007508PEX	$265.88
9 Loop	PRPXV2007509PEX	$504.00		9 Loop	PRPXA2007509PEX	$299.12
10 Loop	PRPXV2007510PEX	$560.00		10 Loop	PRPXA2007510PEX	$332.35
11 Loop	PRPXV2007511PEX	$616.00		11 Loop	PRPXA2007511PEX	$365.59
12 Loop	PRPXV2007512PEX	$672.00		12 Loop	PRPXA2007512PEX	$398.83

Full Stick Available on Page 134

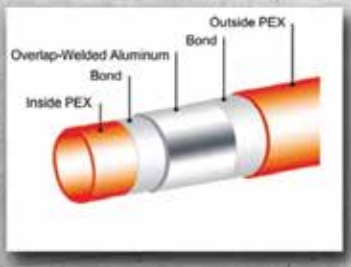
Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 3/4" Dahl Expansion mini-ball valves for (ASTM F1960) soldered on.

Supply Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC, with 3/4" Pro Pex adaptors for (ASTM F1960) soldered on.

Items on this page are made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

F1281/F1282 PEX-AL-PEX Compression Manifolds





NOT FOR POTABLE WATER

WSD 1 THRU 2" X 1/2" & 5/8" COMPRESSION PEX-AL-PEX
for ASTM F1281 Copper Manifolds Open Both Ends



Assembled in the USA with foreign and domestic parts

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 1/2" Compression Mini Ball valves (ASTM F1281)

Part Number	Description	Units Per Box	Single Lot List
CMV1005024PAP	1" x 1/2" Comp Valve	1	$726.99
CMV1255024PAP	1-1/4" x 1/2" Comp Valve	1	$783.64
CMV1505024PAP	1-1/2" x 1/2" Comp Valve	1	$837.72
CMV2005024PAP	2" x 1/2" Comp Valve	1	$990.02



Assembled in the USA with foreign and domestic parts

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 1/2" Compression Adaptor (ASTM F1281)

Part Number	Description	Units Per Box	Single Lot List
CMA1005024PAP	1" x 1/2" Comp	1	$431.63
CMA1255024PAP	1-1/4" x 1/2" Comp	1	$488.28
CMA1505024PAP	1-1/2" x 1/2" Comp	1	$542.36
CMA2005024PAP	2" x 1/2" Comp	1	$694.66



Assembled in the USA with foreign and domestic parts

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 5/8" Compression Mini Ball valves (ASTM F1281)

Part Number	Description	Units Per Box	Single Lot List
CMV1005824PAP	1" x 5/8" Comp Valve	1	$966.10
CMV1255824PAP	1-1/4" x 5/8" Comp Valve	1	$1,020.90
CMV1505824PAP	1-1/2" x 5/8" Comp Valve	1	$1,078.65
CMV2005824PAP	2" x 5/8" Comp Valve	1	$1,230.98



Assembled in the USA with foreign and domestic parts

72" Long | 24 Outlets, 3" On Center

1", 1-1/4", 1-1/2" or 2" Header with (24) 5/8" Compression Adapters(ASTM F1281)

Part Number	Description	Units Per Box	Single Lot List
CMA1005824PAP	1" x 5/8" Comp	1	$878.05
CMA1255824PAP	1-1/4" x 5/8" Comp	1	$932.85
CMA1505824PAP	1-1/2" x 5/8" Comp	1	$990.60
CMA2005824PAP	2" x 5/8" Comp	1	$1,142.93

Items on this page are made per order and are considered special order. Please allow 1-2 days production time plus freight time.

WSD 1" X 1/2" PEX-AL-PEX COMPRESSION
for ASTM F1281 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts



Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold	
1" Header	Return Part #	Return List Price Each
2 Loop	CMV1005002PAP	$60.58
3 Loop	CMV1005003PAP	$90.87
4 Loop	CMV1005004PAP	$121.16
5 Loop	CMV1005005PAP	$151.46
6 Loop	CMV1005006PAP	$181.75
7 Loop	CMV1005007PAP	$212.04
8 Loop	CMV1005008PAP	$242.33
9 Loop	CMV1005009PAP	$272.62
10 Loop	CMV1005010PAP	$302.91
11 Loop	CMV1005011PAP	$333.20
12 Loop	CMV1005012PAP	$363.49

Full Stick Available on Page 138

Number of Loops	For ASTM F1281 Pipe Adapter Manifold	
1" Header	Supply Part #	Supply List Price Each
2 Loop	CMA1005002PAP	$35.97
3 Loop	CMA1005003PAP	$53.95
4 Loop	CMA1005004PAP	$71.94
5 Loop	CMA1005005PAP	$89.92
6 Loop	CMA1005006PAP	$107.91
7 Loop	CMA1005007PAP	$125.89
8 Loop	CMA1005008PAP	$143.88
9 Loop	CMA1005009PAP	$161.86
10 Loop	CMA1005010PAP	$179.85
11 Loop	CMA1005011PAP	$197.83
12 Loop	CMA1005012PAP	$215.81

Return Includes: (1) 1" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" compression mini-ball valves for (ASTM F1281) soldered on.n.

Supply Includes: (1) 1" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" compression adaptors for (ASTM F1281) soldered on.

Also available 13-23 outlets, call for pricing. These may be coupled. These are all made per order and are considered special order. Please allow 1-2 days production time plus freight time.

WSD 1-1/4" X 1/2" PEX-AL-PEX COMPRESSION
for ASTM F1281 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts



Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold			Number of Loops	For ASTM F1281 Pipe Adapter Manifold	
1-1/4" Header	Return Part #	Return List Price Each		1-1/4" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1255002PAP	$65.30		2 Loop	CMA1255002PAP	$40.69
3 Loop	CMV1255003PAP	$97.96		3 Loop	CMA1255003PAP	$61.04
4 Loop	CMV1255004PAP	$130.61		4 Loop	CMA1255004PAP	$81.38
5 Loop	CMV1255005PAP	$163.26		5 Loop	CMA1255005PAP	$101.73
6 Loop	CMV1255006PAP	$195.91		6 Loop	CMA1255006PAP	$122.07
7 Loop	CMV1255007PAP	$228.56		7 Loop	CMA1255007PAP	$142.42
8 Loop	CMV1255008PAP	$261.21		8 Loop	CMA1255008PAP	$162.76
9 Loop	CMV1255009PAP	$293.87		9 Loop	CMA1255009PAP	$183.11
10 Loop	CMV1255010PAP	$326.52		10 Loop	CMA1255010PAP	$203.45
11 Loop	CMV1255011PAP	$359.17		11 Loop	CMA1255011PAP	$223.80
12 Loop	CMV1255012PAP	$391.82		12 Loop	CMA1255012PAP	$244.14

Full Stick Available on Page 138

Return Includes: (1) 1-1/4" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" compression mini-ball valves for (ASTM F1281) soldered on.

Supply Includes: (1) 1-1/4" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" compression adaptors for (ASTM F1281) soldered on.

Also available 13-23 outlets, call for pricing. These may be coupled. These are all made per order and are considered special order. Please allow 1-2 days production time plus freight time.

WSD 1-1/2" X 1/2" PEX-AL-PEX COMPRESSION
for ASTM F1281 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts



Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold			Number of Loops	For ASTM F1281 Pipe Adapter Manifold	
1-1/2" Header	Return Part #	Return List Price Each		1-1/2" Header	Supply Part #	Supply List Price Each
2 Loop	CMV1505002PAP	$69.81		2 Loop	CMA1505002PAP	$45.20
3 Loop	CMV1505003PAP	$104.72		3 Loop	CMA1505003PAP	$67.80
4 Loop	CMV1505004PAP	$139.62		4 Loop	CMA1505004PAP	$90.39
5 Loop	CMV1505005PAP	$174.53		5 Loop	CMA1505005PAP	$112.99
6 Loop	CMV1505006PAP	$209.43		6 Loop	CMA1505006PAP	$135.59
7 Loop	CMV1505007PAP	$244.34		7 Loop	CMA1505007PAP	$158.19
8 Loop	CMV1505008PAP	$279.24		8 Loop	CMA1505008PAP	$180.79
9 Loop	CMV1505009PAP	$314.15		9 Loop	CMA1505009PAP	$203.39
10 Loop	CMV1505010PAP	$349.05		10 Loop	CMA1505010PAP	$225.98
11 Loop	CMV1505011PAP	$383.96		11 Loop	CMA1505011PAP	$248.58
12 Loop	CMV1505012PAP	$418.86		12 Loop	CMA1505012PAP	$271.18

Full Stick Available on Page 138

Return Includes: (1) 1-1/2" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" compression mini-ball valves for (ASTM F1281) soldered on.

Supply Includes: (1) 1-1/2" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" compression adaptors for (ASTM F1281) soldered on.

Also available 13-23 outlets, call for pricing. These may be coupled. These are all made per order and are considered special order. Please allow 1-2 days production time plus freight time.

WSD 2" X 1/2" PEX-AL-PEX COMPRESSION
for ASTM F1281 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts



Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold			Number of Loops	For ASTM F1281 Pipe Adapter Manifold	
2" Header	Return Part #	Return List Price Each		2" Header	Supply Part #	Supply List Price Each
2 Loop	CMV2005002PAP	$82.50		2 Loop	CMA2005002PAP	$57.89
3 Loop	CMV2005003PAP	$123.75		3 Loop	CMA2005003PAP	$86.83
4 Loop	CMV2005004PAP	$165.00		4 Loop	CMA2005004PAP	$115.78
5 Loop	CMV2005005PAP	$206.25		5 Loop	CMA2005005PAP	$144.72
6 Loop	CMV2005006PAP	$247.51		6 Loop	CMA2005006PAP	$173.67
7 Loop	CMV2005007PAP	$288.76		7 Loop	CMA2005007PAP	$202.61
8 Loop	CMV2005008PAP	$330.01		8 Loop	CMA2005008PAP	$231.55
9 Loop	CMV2005009PAP	$371.26		9 Loop	CMA2005009PAP	$260.50
10 Loop	CMV2005010PAP	$412.51		10 Loop	CMA2005010PAP	$289.44
11 Loop	CMV2005011PAP	$453.76		11 Loop	CMA2005011PAP	$318.39
12 Loop	CMV2005012PAP	$495.01		12 Loop	CMA2005012PAP	$347.33

Full Stick Available on Page 138

Return Includes: (1) 2" header open both ends, 1-1/2" leads, 1/2" drops at 3" OC, with 1/2" compression mini-ball valves for (ASTM F1281) soldered on.

Supply Includes: (1) 2" header open both ends, 1-1/2" Leads, 1/2" drops at 3" OC, with 1/2" compression adaptors for (ASTM F1281) soldered on.

Also available 13-23 outlets, call for pricing. These may be coupled. These are all made per order and are considered special order. Please allow 1-2 days production time plus freight time.

WSD 1" X 1/2" COMPLETE MANIFOLDS
for PEX-AL-PEX Compression ASTM F1281/1282



Assembled in the USA
with foreign and domestic parts



Number of Loops	PEX-AL-PEX Compression ASTM F1281/1282		Number of Loops	PEX-AL-PEX Compression ASTM F1281/1282	
1" Header	Return Part #	Valved Return List Price	1" Header	Supply Part #	Adaptor Supply List Price
2 Loop	CMR2PAP	$113.88	2 Loop	CMS2PAP	$89.27
3 Loop	CMR3PAP	$144.17	3 Loop	CMS3PAP	$107.25
4 Loop	CMR4PAP	$174.46	4 Loop	CMS4PAP	$125.24
5 Loop	CMR5PAP	$204.76	5 Loop	CMS5PAP	$143.22
6 Loop	CMR6PAP	$235.05	6 Loop	CMS6PAP	$161.21
7 Loop	CMR7PAP	$265.34	7 Loop	CMS7PAP	$179.19
8 Loop	CMR8PAP	$295.63	8 Loop	CMS8PAP	$197.18
9 Loop	CMR9PAP	$325.92	9 Loop	CMS9PAP	$215.16
10 Loop	CMR10PAP	$356.21	10 Loop	CMS10PAP	$233.15
11 Loop	CMR11PAP	$386.50	11 Loop	CMS11PAP	$251.13
12 Loop	CMR12PAP	$416.79	12 Loop	CMS12PAP	$269.11

Return Includes: (1) 1" header with 1/2" mini-ball valves, (1) 1" ball valve, (1) 1/4 turn boiler drain with cap.

Supply Includes: (1) 1" header with 1/2" adaptors, (1) 1" ball valve, (1) 1/4 turn boiler drain with cap.

Please call for pricing on 1-1/4", 1-1/2", and 2" headers.

These are all made per order and are considered special order. Please allow 1-2 days production time plus freight time.

WSD 1" OR 1-1/4" X 5/8" PEX-AL-PEX COMPRESSION
for ASTM F1281/1282 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts



Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold			Number of Loops	PEX-AL-PEX Compression Adapter Manifold	
1" Header	Return Part #	Valved Return List Price		1" Header	Supply Part #	Adaptor Supply List Price
2 Loop	CMV1005802PAP	$80.51		2 Loop	CMA1005802PAP	$73.17
3 Loop	CMV1005803PAP	$120.76		3 Loop	CMA1005803PAP	$109.76
4 Loop	CMV1005804PAP	$161.02		4 Loop	CMA1005804PAP	$146.34
5 Loop	CMV1005805PAP	$201.27		5 Loop	CMA1005805PAP	$182.93
6 Loop	CMV1005806PAP	$241.53		6 Loop	CMA1005806PAP	$219.51
7 Loop	CMV1005807PAP	$281.78		7 Loop	CMA1005807PAP	$256.10
8 Loop	CMV1005808PAP	$322.03		8 Loop	CMA1005808PAP	$292.68
9 Loop	CMV1005809PAP	$362.29		9 Loop	CMA1005809PAP	$329.27
10 Loop	CMV1005810PAP	$402.54		10 Loop	CMA1005810PAP	$365.85
11 Loop	CMV1005811PAP	$442.80		11 Loop	CMA1005811PAP	$402.44
12 Loop	CMV1005812PAP	$483.05		12 Loop	CMA1005812PAP	$439.02

Full Stick Available on Page 138

Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold			Number of Loops	PEX-AL-PEX Compression Adapter Manifold	
1-1/4" Header	Return Part #	Valved Return List Price		1-1/4" Header	Supply Part #	Adaptor Supply List Price
2 Loop	CMV1255802PAP	$85.08		2 Loop	CMA1255802PAP	$77.74
3 Loop	CMV1255803PAP	$127.61		3 Loop	CMA1255803PAP	$116.61
4 Loop	CMV1255804PAP	$170.15		4 Loop	CMA1005804PAP	$155.48
5 Loop	CMV1255805PAP	$212.69		5 Loop	CMA1255805PAP	$194.34
6 Loop	CMV1255806PAP	$255.23		6 Loop	CMA1255806PAP	$233.21
7 Loop	CMV1255807PAP	$297.76		7 Loop	CMA1005807PAP	$272.08
8 Loop	CMV1005808PAP	$340.30		8 Loop	CMA1255808PAP	$310.95
9 Loop	CMV1255809PAP	$382.84		9 Loop	CMA1255809PAP	$349.82
10 Loop	CMV1255810PAP	$425.38		10 Loop	CMA1255810PAP	$388.69
11 Loop	CMV1255811PAP	$467.91		11 Loop	CMA1255811PAP	$427.56
12 Loop	CMV1255812PAP	$510.45		12 Loop	CMA1255812PAP	$466.43

Full Stick Available on Page 138

Return Includes: (1) 1" or 1-1/4" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" compression mini-ball valves for (ASTM F1281/1282) soldered on. **Supply Includes:** (1) 1" or 1-1/4" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC, with 5/8" compression adaptors for (ASTM F1281/1282) soldered on.

These are all made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD 1-1/2" OR 2" X 5/8" PEX-AL-PEX COMPRESSION
for ASTM F1281/1282 Copper Manifolds Open Both Ends



Assembled in the USA
with foreign and domestic parts



Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold			Number of Loops	PEX-AL-PEX Compression Adapter Manifold	
1-1/2" Header	Return Part #	Valved Return List Price		1-1/2" Header	Supply Part #	Adaptor Supply List Price
2 Loop	CMV1505802PAP	$89.89		2 Loop	CMA1505802PAP	$82.55
3 Loop	CMV1505803PAP	$134.83		3 Loop	CMA1505803PAP	$123.83
4 Loop	CMV1505804PAP	$179.78		4 Loop	CMA1505804PAP	$165.10
5 Loop	CMV1505805PAP	$224.72		5 Loop	CMA1505805PAP	$206.38
6 Loop	CMV1505806PAP	$269.66		6 Loop	CMA1505806PAP	$247.65
7 Loop	CMV1505807PAP	$314.61		7 Loop	CMA1505807PAP	$288.93
8 Loop	CMV1505808PAP	$359.55		8 Loop	CMA1505808PAP	$330.20
9 Loop	CMV1505809PAP	$404.50		9 Loop	CMA1505809PAP	$371.48
10 Loop	CMV1505810PAP	$449.44		10 Loop	CMA1505810PAP	$412.75
11 Loop	CMV1505811PAP	$494.38		11 Loop	CMA1505811PAP	$454.03
12 Loop	CMV1505812PAP	$539.33		12 Loop	CMA1505812PAP	$495.30

Full Stick Available on Page 138

Number of Loops	PEX-AL-PEX Compression Mini Ball Valve Manifold			Number of Loops	PEX-AL-PEX Compression Adapter Manifold	
2" Header	Return Part #	Valved Return List Price		2" Header	Supply Part #	Adaptor Supply List Price
2 Loop	CMV2005802PAP	$102.58		2 Loop	CMA2005802PAP	$95.24
3 Loop	CMV2005803PAP	$153.87		3 Loop	CMA2005803PAP	$142.87
4 Loop	CMV2005804PAP	$205.16		4 Loop	CMA2005804PAP	$190.49
5 Loop	CMV2005805PAP	$256.46		5 Loop	CMA2005805PAP	$238.11
6 Loop	CMV2005806PAP	$307.75		6 Loop	CMA2005806PAP	$285.73
7 Loop	CMV2005807PAP	$359.04		7 Loop	CMA2005807PAP	$333.35
8 Loop	CMV2005808PAP	$410.33		8 Loop	CMA2005808PAP	$380.98
9 Loop	CMV2005809PAP	$461.62		9 Loop	CMA2005809PAP	$428.60
10 Loop	CMV2005810PAP	$512.91		10 Loop	CMA2005810PAP	$476.22
11 Loop	CMV2005811PAP	$564.20		11 Loop	CMA2005811PAP	$523.84
12 Loop	CMV2005812PAP	$615.49		12 Loop	CMA2005812PAP	$571.47

Full Stick Available on Page 138

Return Includes: (1) 1-1/2" or 2" header open both ends, 1-1/2" leads, 3/4" drops at 3" OC, with 5/8" compression mini-ball valves for (ASTM F1281/1282) soldered on. **Supply Includes:** (1) 1-1/2" or 2" header open both ends, 1-1/2" Leads, 3/4" drops at 3" OC, with 5/8" compression adaptors for (ASTM F1281/1282) soldered on.

These are all made per order and are considered special order.
Please allow 1-2 days production time plus freight time.

WSD End Caps and Accessories



MADE IN CANADA

Pipe run 1", 1-1/4", 1-1/2", or 2" with 1/8" tap for vent.
Spun closed one end and expanded to coupling size the other end.

Part #	Description	Units per Box	Single Lot List	Box Lot List / each
ECV100	1" - 1/8" Vent Tap	50	$25.98	$20.78
ECV125	1-1/4" - 1/8" Vent Tap	40	$34.15	$27.32
ECV150	1-1/2" - 1/8" Vent Tap	30	$44.77	$35.82
ECV200	2" - 1/8" Vent Tap	15	$92.81	$74.25



MADE IN CANADA

Pipe run 1", 1-1/4", 1-1/2", or 2" with 1/8" tap for vent and 1/2" FIP for Drain.
Spun closed one end and expanded to coupling size the other end.

Part #	Description	Units per Box	Single Lot List	Box Lot List / each
ECVD100	1" - 1/8" Vent Tap & 1/2" FIP	50	$27.23	$21.79
ECVD125	1-1/4" - 1/8" Vent Tap & 1/2" FIP	30	$34.21	$27.37
ECVD150	1-1/2" - 1/8" Vent Tap & 1/2" FIP	30	$42.39	$33.91
ECVD200	2" - 1/8" Vent Tap & 1/2" FIP	15	$65.18	$52.14







Part #	Description	List Price each
WSD1/2BD	1/2" 1/4 turn boiler drain with cap	$13.33
APAS0-100	0-100 PSI Air pressure assembly with hose thread	$29.39
ECD100	1" swt x 1/2" FIP	$14.25

WSD Combo Kits



- **Tridicator Combo Kit Includes:**
- **1-Gauge Part #PB300804-1.5-50**
- **1-Temperature Gauge Tee**
- **Choose from 3/4", 1", 1-1/4"/1-1/2", and 2"**
- **Unassembled**

Part #	Description	List Price / each
UGT075EXTRI	3/4" – 1/2" FIP, Tridicator Combo Kit	$53.68
UGT100EXTRI	1" – 1/2" FIP, Tridicator Combo Kit	$54.28
UGT125EXTRI	1-1/4" – 1/2" FIP, Tridicator Combo Kit	$58.18
UGT150EXTRI	1-1/2" – 1/2" FIP, Tridicator Combo Kit	$63.37
UGT200EXTRI	2" – 1/2" FIP, Tridicator Combo Kit	$75.10



- **Bimetal Combo Kit Includes:**
- **1-Gauge Part# B259951-2W**
- **1-Temperature Gauge Tee**
- **Choose from 3/4", 1", 1-1/4"/1-1/2", and 2"**
- **Unassembled**

Part #	Description	List Price / each
UGT075EXBI	3/4" – 1/2" FIP, Bimetal Combo Kit	$30.07
UGT100EXBI	1" – 1/2" FIP, Bimetal Combo Kit	$30.67
UGT125EXBI	1-1/4" – 1/2" FIP, Bimetal Combo Kit	$34.57
UGT150EXBI	1-1/2" – 1/2" FIP, Bimetal Combo Kit	$39.76
UGT200EXBI	2" – 1/2" FIP, Bimetal Combo Kit	$52.09

Thermometer Gauge Tees



MADE IN CANADA

Pipe run 1", 1-1/4", 1-1/2", or 2" with 1/2" FIP for temperature gauge or drain. Plain one end and expanded to coupling size the other end. (The 3/4" is 1" pipe run reduced to 3/4" male pipe run 1 end & reduced to 3/4" coupling size on the other end)

Part #	Description	Units per Box	Single Lot List	Box Lot List / each
GT075EX	3/4" - 1/2" FIP	50	$16.32	$13.06
GT100EX	1" - 1/2" FIP	50	$16.92	$13.54
GT125EX	1-1/4" - 1/2" FIP	40	$20.82	$16.65
GT150EX	1-1/2" - 1/2" FIP	30	$26.01	$20.81
GT200EX	2" - 1/2" FIP	15	$38.34	$30.68



MADE IN CANADA

Pipe run 1", 1-1/4", 1-1/2", or 2" with 1/2" FIP, Plain Both Ends.

Part #	Description	Units per Box	Single Lot List	Box Lot List / each
GT100PL-LF	1" - 1/2" FIP	50	$20.59	$16.47
GT125PL-LF	1-1/4" - 1/2" FIP	40	$24.84	$19.87
GT150PL-LF	1-1/2" - 1/2" FIP	30	$30.72	$24.58
GT200PL-LF	2" - 1/2" FIP	15	$43.46	$34.77

Outlet Tools



Resize or Re-round 1/2", 3/4" or 1" Types M, L, or K Copper Tube

Part Number	Description	Units per Box	Single Lot List
AOTTL50	For 1/2" Copper	1	$107.85
AOTTL75	For 3/4" Copper	1	$123.85
AOTTL100	For 1" Copper	1	$138.23
AOTTLSET	1/2", 3/4" ,1" Kit	3 tools total	$362.43

Miljoco Gauges



Lower Mount Tridicator



Bi-Metal Temp.

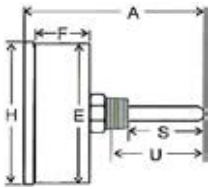


Center Back Mount Tridicator

WSD Part #	List for (1 to 9)	List for (10 to 49)	List for (50 plus)	Description
B259951-2W	$17.50	$15.75	$15.18	Bi-Metal Temperature Gauge with Well
PB300804-2-5	$43.73	$39.36	$37.42	Tridicator W/center Back Mount-Long
PB300804-2-25	$43.73	$39.36	$37.42	Tridicator W/center Back Mount-Long
PB300804-1.5-50	$43.73	$39.36	$37.42	Tridicator W/center Back Mount-Short
PB3008L04-2	$53.03	$47.73	$44.96	Tridicator with Lower Mount
P2508L-03	$15.77	$14.19	$13.77	0-30 Pressure Gauge with 1/4" MPT Lower Mount

TRIDICATOR

Mix and Match for all gauge quantities	
Case:	Black Painted
Window:	Acrylic
System Accuracy:	Press: +/-3%-2%-3% Temp: +/-1 scale div.
Standard Range:	80° - 290° F 30° - 140° C



BI-METAL

Mix and Match for all gauge quantities	
Case:	Zinc Plated Brass
Window:	Glass
System Accuracy:	+/-5°F +/-2°C
Standard Range:	30°-250° F 0°-120° C

Miljoco Part#	Connection	A	E	F	H	S	U
B259951-2W	1/2" NPT	2.5"	2.5"	3/8"	2.5"	1.125"	1.75"
PB300804-2-5	1/2" NPT	5.25"	3"	1.5"	3.25"	2.5"	3.25"
PB300804-2-25	1/4" NPT	5.25"	3"	1.5"	3.25"	2.5"	3.25"
PB300804-1.5-50	1/2" NPT	4"	3"	1.5"	3.25"	1.5"	2.135"
PB3008L04-2	1/2" NPT	6.5"	3"	1.5"	3.25"	2.25"	3"
P2508L03	1/4" NPT	NA	2.44"	1.15"	2.48"	NA	.73"

WWW.WILLOWSRA.COM

WSD Tubing & Fittings



WSD-PEX C Barrier Pex Tubing

Product Description WSD-PEX C Barrier Tubing	WSD-PEX C Part Number	List Price Each	Pallet Qty
1/2" x 300 ft. coils	EVOH5x300Red	$200.00	30
1/2" x 1000 ft. coils	EVOH5x1000Red	$666.67	30
5/8" x 300 ft. coils	EVOH6x300RED	$274.29	30
5/8" x 400 ft. coils	EVOH6x400Red	$365.60	12
5/8" x 450 ft. coils	EVOH6x450Red	$411.43	12
5/8" x 500 ft. coils	EVOH6x500Red	$457.14	12
5/8" x 1000 ft. coils	EVOH6x1000Red	$914.29	7
3/4" x 100 ft. coils	EVOH7x100Red	$110.48	17
3/4" x 300 ft. coils	EVOH7x300Red	$331.43	15
3/4" x 500 ft. coils	EVOH7x500Red	$552.38	11
1" x 100 ft. coils	EVOH8x100Red	$209.52	17
1" x 300 ft. coils	EVOH8x300Red	$628.57	10
1" x 500 ft. coils	EVOH8x500Red	$1,047.62	6

Nominal Tube Size	Outer Diameter	Tolerance	Wall Thickness	Tolerance
3/8"	0.500"	+/- 0.003"	0.070"	+/- 0.010"
1/2"	0.625"	+/- 0.004"	0.070"	+/- 0.010"
5/8"	0.750"	+/- 0.004"	0.083"	+/- 0.010"
3/4"	0.875"	+/- 0.004"	0.097"	+/- 0.010"
1"	1.125"	+/- 0.005"	0.125"	+/- 0.013"



WSD (PEX-AL-PEX) Tubing Barrier

Product Description WSD PEX-AL-PEX Composite	Part Number	List Price Each	Pallet Qty
1/2" x 250 ft. coil Orange	PAP4x250Orange	$166.66	30
1/2" x 300 ft. coil Orange	PAP4x300Orange	$200.00	30
1/2" x 1000 ft. coil Orange	PAP4x1000Orange	$666.66	10
5/8" x 500 ft. coil Orange	PAP5x500Orange	$488.88	28
3/4" x 100 ft. coil White	PAP6x100White	$155.55	32
3/4" x 500 ft. coil White	PAP6x500White	$777.77	8
1" x 100 ft. coil Orange	PAP7x100Orange	$217.77	12
1" x 300 ft. coil Orange	PAP7x300Orange	$653.33	9
1" x 500 ft. coil Orange	PAP7x500Orange	$1,088.88	8

WSD PEX-AL-PEX is a composite pipe that combines the advantages of metal and plastic pipe into an innovative and universal piping solution for all your radiant heating. WSD PEX-AL-PEX multi-layered composite pipe consists of an overlapped welded aluminum core with an inner and outer layer composed of cross linked polyethylene. The inner welded layer of aluminum makes WSD PEX-AL-PEX 100% oxygen tight, providing longer life for heating system components. Dimensionally built to the F1281 standards.

For Heating Purposes Only.
Not Certified for Potable Water.

Color of Pipe and roll size may vary. These products have long lead times when they are not in stock and we are occasionally out of normal stock items. Please check stock status when ordering.

Made in China



WSD Pex-A Pipe Barrier



PEX-A Piping 94000 Series			
Description	**Part Number**	**Qty.**	**List Price**
3/8" PEX-A x 300' With O2 Diffusion Barrier	WSD3x300A	1	$220.05
3/8" PEX-A x 1000' With O2 Diffusion Barrier	WSD3x1000A	1	$733.51
1/2" PEX-A X 20' Pipe with O2 Diffusion Barrier	WSD4x20A	20/Bag	$15.19
1/2" PEX-A x 100' With O2 Diffusion Barrier	WSD4x100A	1	$75.53
1/2" PEX-A x 300' With O2 Diffusion Barrier	WSD4x300A	1	$226.58
1/2" PEX-A x 500' With O2 Diffusion Barrier	WSD4x500A	1	$377.67
1/2" PEX-A x 1000' With O2 Diffusion Barrier	WSD4x1000A	1	$755.30
5/8" PEX-A x 450' With O2 Diffusion Barrier	WSD5x450A	1	$447.72
5/8" PEX-A x 500' With O2 Diffusion Barrier	WSD5x500A	1	$497.57
5/8" PEX-A x 1000' With O2 Diffusion Barrier	WSD5x1000A	1	$995.15
3/4" PEX-A X 20' Pipe with O2 Diffusion Barrier	WSD6x20A	10/Bag	$25.93
3/4" PEX-A x 100' With O2 Diffusion Barrier	WSD6x100A	1	$128.85
3/4" PEX-A x 300' With O2 Diffusion Barrier	WSD6x300A	1	$386.55
3/4" PEX-A x 500' With O2 Diffusion Barrier	WSD6x500A	1	$644.25
3/4" PEX-A x 1000' With O2 Diffusion Barrier	WSD6x1000A	1	$1288.50
1" PEX-A X 20' Pipe with O2 Diffusion Barrier	WSD7x20A	5/Bag	$44.14
1" PEX-A x 100' With O2 Diffusion Barrier	WSD7x100A	1	$219.99
1" PEX-A x 300' With O2 Diffusion Barrier	WSD7x300A	1	$659.95
1" PEX-A x 500' With O2 Diffusion Barrier	WSD7x500A	1	$1099.91

WSD Pex-A tubing is made using the Engel method. The Engel method is a hot cross-linking process, meaning the actual cross-linking takes place during the extrusion process when the base polyethylene is above its crystal melting temperature. The Engel method provides more precise control over the degree, consistency and uniformity of cross-linking. This means the tubing is evenly cross-linked, with no weak links within its molecular chains.

WSD Pex-A Pipe SDR-9 Barrier





WSD PEX-A Piping SDR-9			
Description	**Part Number**	**Qty.**	**List Price**
PEX-A 1-1/4" X 20' SDR-9 Pipe with O2 Diffusion Barrier	WSD8x20A	1	$54.14
PEX-A 1-1/4" X 100' SDR-9 Pipe with O2 Diffusion Barrier	WSD8x100A	1	$270.09
PEX-A 1-1/4" X 300' SDR-9 Pipe with O2 Diffusion Barrier	WSD8x300A	1	$810.28
PEX-A 1-1/4" SDR-9 Pipe with O2 Diffusion Barrier	WSD8xCTLA	Per Ft.	$2.70 per Ft.
PEX-A 1-1/2" X 20' SDR-9 Pipe with O2 Diffusion Barrier	WSD9x20A	1	$75.07
PEX-A 1-1/2" X 100' SDR-9 Pipe with O2 Diffusion Barrier	WSD9x100A	1	$374.75
PEX-A 1-1/2" X 300' SDR-9 Pipe with O2 Diffusion Barrier	WSD9x300A	1	$1124.24
PEX-A 1-1/2" SDR-9 Pipe with O2 Diffusion Barrier	WSD9xCTLA	Per Ft.	$3.75 per Ft.
PEX-A 2" X 20' SDR-9 Pipe with O2 Diffusion Barrier	WSD10x20A	1	$125.96
PEX-A 2" X 100' SDR-9 Pipe with O2 Diffusion Barrier	WSD10x100A	1	$629.17
PEX-A 2" X 300' SDR-9 Pipe with O2 Diffusion Barrier	WSD10x300A	1	$1887.52
PEX-A 2" SDR-9 Pipe with O2 Diffusion Barrier	WSD10xCTLA	Per Ft.	$6.29 per Ft.

Note: Per foot pipe available as cut-to-Length. Max. coil length 1,000'
Additional Service Cutting Charges apply.

ALL ITEMS SPECIAL ORDER

WSD Pex-B Pipe Barrier



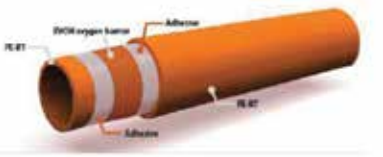
Description	Part Number	Qty.	List Price
3/8" PEX-B x 300' With O2 Diffusion Barrier	WSD3x300B	1	$162.18
3/8" PEX-B x 1000' With O2 Diffusion Barrier	WSD3x1000B	1	$540.61
1/2" PEX-B x 20' Pipe with O2 Diffusion Barrier	WSD4x20B	50/Bag	$12.63
1/2" Pex-B x 100' With O2 Diffusion Barrier	WSD4x100B	1	$63.10
1/2" PEX-B x 300' With O2 Diffusion Barrier	WSD4x300B	1	$189.29
1/2" PEX-B x 1000' With O2 Diffusion Barrier	WSD4x1000B	1	$630.97
5/8" PEX-B x 450' With O2 Diffusion Barrier	WSD5x450B	1	$376.72
5/8" PEX-B x 500' With O2 Diffusion Barrier	WSD5x500B	1	$418.58
5/8" PEX-B x 1000' With O2 Diffusion Barrier	WSD5x1000B	1	$837.16
3/4" PEX-B X 20'Pipe with O2 Diffusion Barrier	WSD6x20B	25/Bag	$21.91
3/4" PEX-B x 100' With O2 Diffusion Barrier	WSD6x100B	1	$104.92
3/4" PEX-B x 300' With O2 Diffusion Barrier	WSD6x300B	1	$314.77
3/4" PEX-B x 500' With O2 Diffusion Barrier	WSD6x500B	1	$524.61
3/4" PEX-B x 1000' With O2 Diffusion Barrier	WSD6x1000B	1	$1049.23
1" PEX-B X 20' Pipe with O2 Diffusion Barrier	WSD7x20B	5/Bag	$37.90
1" PEX-B x 100' With O2 Diffusion Barrier	WSD7x100B	1	$175.81
1" PEX-B x 300' With O2 Diffusion Barrier	WSD7x300B	1	$526.83

WSD Pex-B pipes are manufactured from special HDPE resins. The cross-linking is performed in a state of the art Silane accelerator post extrusion resulting in an excellent and even cross-linking. The cross-linking renders the pipe improved mechanical process such as resistance to corrosion, pressures at high temperature, superb abrasion and chemical resistance. Product is coated with EVOH barrier which prevents oxygen from entering the system through the pipe wall. Products are manufactured in red color. WSD Pex-B pipes can be used with the following ASTM fitting systems: F2159, F1807, F1960, and F2080. Twenty-five year manufacturers warranty applies.

ALL ITEMS SPECIAL ORDER

WSD Pert Heating Accessories





Not Plumbing Approved

Description	Part Number	Qty.	List Price
3/8"x300' Heat-Pert Barrier Pipe	WSD3x300PERT	1	$133.67
3/8"x1,000' Heat-Pert Barrier Pipe	WSD3x1000PERT	1	$445.56
1/2"x100' Heat-Pert Barrier Pipe	WSD4x100PERT	1	$55.15
1/2"x300' Heat-Pert Barrier Pipe	WSD4x300PERT	1	$165.44
1/2"x1,000' Heat-Pert Barrier Pipe	WSD4x1000PERT	1	$551.47
5/8"x300' Heat-Pert Barrier Pipe	WSD5x300PERT	1	$240.08
5/8"x500' Heat-Pert Barrier Pipe	WSD5x500PERT	1	$400.13
5/8"x1,000' Heat-Pert Barrier Pipe	WSD5x1000PERT	1	$800.25
3/4"x100' Heat-Pert Barrier Pipe	WSD6x100PERT	1	$106.53
3/4"x300' Heat-Pert Barrier Pipe	WSD6x300PERT	1	$319.60

WSD Heat Pert pipe is a 5 layer pipe made from Dowlex 2344 resin offering high temperature and pressure resistance without cross linking of the pipe. PERT stands for Poly Ethylene Raised Temperature and carries ratings up to 180F at 100psi. It has superior flexibility and can be used in both radiant and snow melt systems. It is manufactured to ASTM F2623 and is approved by NSF and CSA. Oxygen diffusion meets DIN 4726 which limits oxygen permeation through the pipe wall. It is SDR9 sized pipe and can be used with any ASTM F1807 or F2159 fittings.

ALL ITEMS SPECIAL ORDER

WSD 5 Layer PEX C with UV Outer Layer





Description	Part Number	Qty.	List Price
PEX-C 3/8" x 300' five layer with O2 Diffusion Barrier	WSD3x300FL	1	$170.27
PEX-C 3/8" x 1000' five layer with O2 Diffusion Barrier	WSD3x1000FL	1	$567.54
PEX-C 1/2" x 300' five layer with O2 Diffusion Barrier	WSD4x300FL	1	$210.64
PEX-C 1/2" x 500' five layer with O2 Diffusion Barrier	WSD4x500FL	1	$377.88
PEX-C 1/2" x 1000' five layer with O2 Diffusion Barrier	WSD4x1000FL	1	$702.14
PEX-C 5/8" x 20' five layer with O2 Diffusion Barrier	WSD5x20FL	1	$18.77
PEX-C 5/8" x 450' five layer with O2 Diffusion Barrier	WSD5x450FL	1	$419.23
PEX-C 5/8" x 1000' five layer with O2 Diffusion Barrier	WSD5x1000FL	1	$931.60
PEX-C 3/4" x 20' five layer with O2 Diffusion Barrier	WSD6x20FL	1	$23.48
PEX-C 3/4" x 100' five layer with O2 Diffusion Barrier	WSD6x100FL	1	$116.76
PEX-C 3/4" x 300' five layer with O2 Diffusion Barrier	WSD6x300FL	1	$350.28
PEX-C 3/4" x 500' five layer with O2 Diffusion Barrier	WSD6x500FL	1	$583.80
PEX-C 3/4" x 1000' five layer with O2 Diffusion Barrier	WSD6x1000FL	1	$1167.57
PEX-C 1" x 20' five layer with O2 Diffusion Barrier	WSD7x20FL	1	$42.14
PEX-C 1" x 100' five layer with O2 Diffusion Barrier	WSD7x100FL	1	$209.99
PEX-C 1" x 300' five layer with O2 Diffusion Barrier	WSD7x300FL	1	$629.98
PEX-C 1" x 500' five layer with O2 Diffusion Barrier	WSD7x500FL	1	$1049.97

PEX-C piping is a five layer pex heating pipe with exceptional barrier properties and flexibility. It's Advantages are high flex-ibility, low oxygen permeability, full scratch protection barrier layer, full moisture protection barrier layer with a black UV outer layer.

- **Completely quiet - ideal for wooden floors**
- **Most flexible for snow melt applications**

ALL ITEMS SPECIAL ORDER

WSD Pex-A Pipe Non-Barrier Plumbing



Blue Pipe PEX-A

Description	Part Number	Qty./Coil Length	List Price
Blue Pex-A 1/2" X 20'	WSDPLB4x20ABLUE	20 / bag	$11.16
Blue Pex-A 1/2" X 100'	WSDPLB4x100ABLUE	100'	$53.92
Blue Pex-A 1/2" X 300'	WSDPLB4x300ABLUE	300'	$161.46
Blue Pex-A 1/2" X 1000'	WSDPLB4x1000ABLUE	1000'	$539.18
Blue Pex-A 3/4" X 20'	WSDPLB6x20ABLUE	10 / bag	$19.04
Blue Pex-A 3/4" X 100'	WSDPLB6x100ABLUE	100'	$94.60
Blue Pex-A 3/4" X 300'	WSDPLB6x300ABLUE	300'	$283.79
Blue Pex-A 1" X 20'	WSDPLB7x20ABLUE	5 / bag	$32.51
Blue Pex-A 1" X 100'	WSDPLB7x100ABLUE	100'	$161.95



Red Pipe PEX-A

Description	Part Number	Qty./Coil Length	List Price
Red Pex-A 1/2" X 20'	WSDPLB4x20ARED	20 / bag	$11.16
Red Pex-A 1/2" X 100'	WSDPLB4x100ARED	100'	$53.92
Red Pex-A 1/2" X 300'	WSDPLB4x300ARED	300'	$161.46
Red Pex-A 1/2" X 1000'	WSDPLB4x1000ARED	1000'	$539.18
Red Pex-A 3/4" X 20'	WSDPLB6x20ARED	10 / bag	$19.04
Red Pex-A 3/4" X 100'	WSDPLB6x100ARED	100'	$94.60
Red Pex-A 3/4" X 300'	WSDPLB6x300ARED	300'	$283.79
Red Pex-A 1" X 20'	WSDPLB7x20ARED	5 / bag	$32.51
Red Pex-A 1" X 100'	WSDPLB7x100ARED	100'	$161.95



Natural Pipe PEX-A

Description	Part Number	Qty./Coil Length	List Price
Natural Pex-A 1/2" X 20'	WSDPLB4x20ANAT	20 / bag	$11.16
Natural Pex-A 1/2" X 100'	WSDPLB4x100ANAT	100'	$53.92
Natural Pex-A 1/2" X 300'	WSDPLB4x300ANAT	300'	$161.46
Natural Pex-A 1/2" X 1000'	WSDPLB4x1000ANAT	1000'	$539.18
Natural Pex-A 3/4" X 20'	WSDPLB6x20ANAT	10 / bag	$19.04
Natural Pex-A 3/4" X 100'	WSDPLB6x100ANAT	100'	$94.60
Natural Pex-A 3/4" X 300'	WSDPLB6x300ANAT	300'	$283.79
Natural Pex-A 1" X 20'	WSDPLB7x20ANAT	5 / bag	$32.51
Natural Pex-A 1" X 100'	WSDPLB7x100ANAT	100'	$161.95
Natural Pex-A 1" X 300'	WSDPLB7x300ANAT	300'	$485.55

WSD Pex-A Plumbing Pipe SDR-9





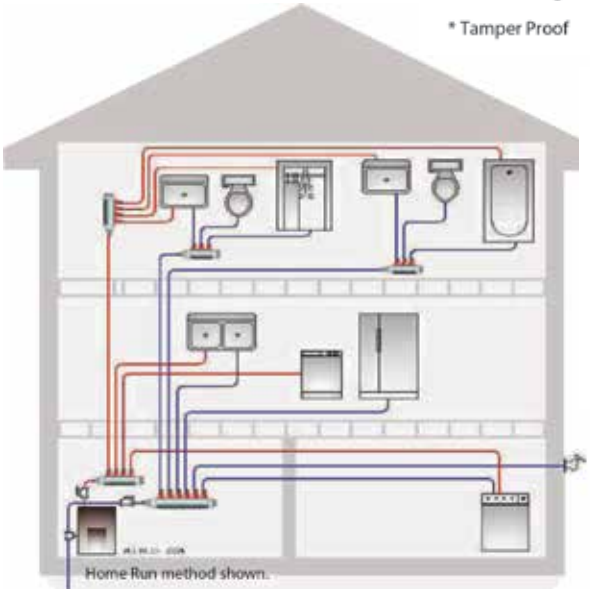
WSD PEX-A Piping SDR-9

Description	Part Number	Qty.	List Price
PEX-A 1-1/4" X 20' SDR-9 Pipe	WSDPLB8x20ANAT	1	$46.33
PEX-A 1-1/4" X 100' SDR-9 Pipe	WSDPLB8x100ANAT	1	$231.11
PEX-A 1-1/4" X 300' SDR-9 Pipe	WSDPLB8x300ANAT	1	$693.34
PEX-A 1-1/4" SDR-9 Pipe	WSDPLB8xCTLANAT	Per Ft.	$2.31 per Ft.
PEX-A 1-1/2" X 20' SDR-9 Pipe	WSDPLB9x20ANAT	1	$64.24
PEX-A 1-1/2" X 100' SDR-9 Pipe	WSDPLB9x100ANAT	1	$320.66
PEX-A 1-1/2" X 300' SDR-9 Pipe	WSDPLB9x300ANAT	1	$961.98
PEX-A 1-1/2" SDR-9 Pipe with	WSDPLB9xCTLANAT	Per Ft.	$3.21 per Ft.
PEX-A 2" X 20' SDR-9 Pipe	WSDPLB10x20ANAT	1	$107.78
PEX-A 2" X 100' SDR-9 Pipe	WSDPLB10x100ANAT	1	$538.37
PEX-A 2" X 300' SDR-9 Pipe	WSDPLB10x300ANAT	1	$1615.10
PEX-A 2" SDR-9 Pipe	WSDPLB10xCTLANAT	Per Ft.	$5.38 per Ft.

Pex-A and Pex-B in red, blue, and natural colors in a variety of lengths make plumbing with pex fast and easy.

NEW ASTM F-1960
Cold Expansion System

* Cost Effective
* Labor Saving
* Tamper Proof



Home Run method shown.

* Plenum Rated - May be run in drop ceilings and chases
- Totally clean, lead free freeze protection
- Flexible - bends easily making installations quicker
- Resists corrosive water and scaling
- Fewer fittings
- Quiet - no water hammer noise
- Equalized pressure drops, minimize hot or cold surges
- Can easily be repaired if pipe is kinked
- Durable/long life
- 25 year limited warranty
- Labor costs reduced by up to 40%
- Lightweight
- Approved for continuous re-circulation of hot water
- Fire stop caulk compatible

Connection Options

- Cold Expansion Rings
- Stainless Press Sleeves
- Pinchlock Clamps
- Copper crimp rings

Note: Pipe available as cut-to-Length. Additional Service Charges apply.

WSD Pex-B Pipe Plumbing



Blue Pipe PEX-B

Description	Part Number	Qty./Coil Length	List Price
Blue Pex-B 1/2" X 20'	WSDPLB4x20BBLUE	50 / bag	$8.47
Blue Pex-B 1/2" X 100'	WSDPLB4x100BBLUE	100'	$41.00
Blue Pex-B 1/2" X 300'	WSDPLB4x300BBLUE	300'	$122.98
Blue Pex-B 1/2" X 1000'	WSDPLB4x1000BBLUE	1000'	$410.06
Blue Pex-B 3/4" X 20'	WSDPLB6x20BBLUE	25 / bag	$15.85
Blue Pex-B 3/4" X 100'	WSDPLB6x100BBLUE	100'	$78.65
Blue Pex-B 3/4" X 300'	WSDPLB6x300BBLUE	300'	$232.95
Blue Pex-B 1" X 20'	WSDPLB7x20BBLUE	15 / bag	$30.20
Blue Pex-B 1" X 100'	WSDPLB7x100BBLUE	100'	$150.42
Blue Pex-B 1" X 300'	WSDPLB7x300ABLUE	300'	$451.25



Red Pipe PEX-B

Description	Part Number	Qty./Coil Length	List Price
Red Pex-B 1/2" X 20'	WSDPLB4x20BRED	50 / bag	$8.47
Red Pex-B 1/2" X 100'	WSDPLB4x100BRED	100'	$41.00
Red Pex-B 1/2" X 300'	WSDPLB4x300BRED	300'	$122.98
Red Pex-B 1/2" X 1000'	WSDPLB4x1000BRED	1000'	$410.06
Red Pex-B 3/4" X 20'	WSDPLB6x20BRED	25 / bag	$15.85
Red Pex-B 3/4" X 100'	WSDPLB6x100BRED	100'	$78.65
Red Pex-B 3/4" X 300'	WSDPLB6x300BRED	300'	$232.95
Red Pex-B 1" X 20'	WSDPLB7x20BRED	15 / bag	$30.20
Red Pex-B 1" X 100'	WSDPLB7x100BRED	100'	$150.42
Red Pex-B 1" X 300'	WSDPLB7x300BRED	300'	$451.25



White Pipe PEX-B

Description	Part Number	Qty./Coil Length	List Price
White Pex-B 1/2" X 20'	WSDPLB4x20BWHITE	50 / bag	$8.47
White Pex-B 1/2" X 100'	WSDPLB4x100BWHITE	100'	$41.00
White Pex-B 1/2" X 300'	WSDPLB4x300BWHITE	300'	$122.98
White Pex-B 1/2" X 1000'	WSDPLB4x1000BWHITE	1000'	$410.06
White Pex-B 3/4" X 20'	WSDPLB6x20BWHITE	25 / bag	$15.85
White Pex-B 3/4" X 100'	WSDPLB6x100BWHITE	100'	$78.65
White Pex-B 3/4" X 300'	WSDPLB6x300BWHITE	300'	$232.95
White Pex-B 1" X 20'	WSDPLB7x20BWHITE	15 / bag	$30.20
White Pex-B 1" X 100'	WSDPLB7x100BWHITE	100'	$150.42

NOTES

www.willowsra.com
WSD
WISCONSIN • U.S.A.

WSD Pre-Insulated Pipe

3 & 5 WRAP

Assembled in the USA
with foreign and domestic parts

Why choose WSD Pre-insulated Pipe:

- **Available with** – PEX-AL-PEX, Non Barrier, and Oxygen Barrier Pex Pipe
- **Pre-assembled** – Unroll and connect the ends. It's that easy!
- **Flexible** – No corners to buy, no corners to struggle with!
- **Uses** – Gas boiler & wood boiler distribution lines.
- **Winter Sales** – Very little heat loss when laid on frozen ground < 2 degrees average per 100ft on the 3 wrap and < 1 degrees on the 5 wrap.
- **Affordable** – Inexpensive pipe Allows you to put the wood stove where you want.
- **Efficient** – Lengths up to 500' in 3 wrap and up to 450' in 5 wrap No splice in the transfer lines.
- **Saves Money** – Only buy what you need! With cut to length prices there is no need to buy a full roll.
- **Easy Connections** – Screw compression fittings available for the PEX-AL-PEX. NO Special Tools. Standard pex barb fittings for the non barrier.

Available in multiple pipe sizes

3/4"
1"
1 1/4"
1 1/2"

Pipe can be special ordered with additional lines of tubing inside

All insulated pipe always comes with a string inside to pull electrical and other wiring.







WSD Pre-Insulated Pipe

A Few Measuring Tips:

- Include the measurement from the house inlet to the bottom of the trench.
- Include the measurement from the stove connections to the bottom of the trench.
- Allow enough length inside the house for easy splicing to internal piping.
- Consider adding additional footage for an uneven trench, avoiding tree roots, rocks etc.

This completely pre-assembled pipe includes: Two PEX-AL-PEX or plain Pex lines, It is tightly wrapped with 3 or 5 wraps of closed-cell, reflective foil-faced insulation. It is taped solid and covered with a flexible non-perforated drain tile, and then coiled on a pallet for EASY transporting. Color of pipe and tile may vary.







WSD Insulated Special Order Pex Pipe

3 WRAP

Assembled in the USA
with foreign and domestic parts





(2) Lines of Pex wrapped in 3 layers of closed-cell reflective insulation and fed inside flexible non-perforated drain tile. We will cut to length in 5' increments. Dimensionally built to F876/F877 standard.

Part Number	Description	Price per Ft
WSD-EZ0.7502BCTL3W	Insulated Pipe w/3/4" Oxygen Barrier Pex 3 wrap 4" Tile	$10.83
WSD-EZ1.0002BCTL3W	Insulated Pipe w/1" Oxygen Barrier Pex 3 wrap 4" Tile	$11.62
WSD-EZ1.2502BCTL3W	Insulated Pipe w/1 1/4" Oxygen Barrier Pex 3 wrap 4" Tile	$15.83
WSD-EZ1.5002BCTL3W	Insulated Pipe w/1 1/2" Oxygen Barrier Pex 3 wrap 5" Tile	$18.98
WSD-EZ0.75NBCTL3W	Insulated Pipe w/3/4" Non-Barrier Pex 3 Wrap 4" Tile	$8.86
WSD-EZ1.00NBCTL3W	Insulated Pipe w/1" Non-Barrier Pex 3 Wrap 4 Tile	$10.44
WSD-EZ1.25NBCTL3W	Insulated Pipe w/1 1/4" Non-Barrier Pex 3 Wrap 5" Tile	$13.98
WSD-EZ1.50NBCTL3W	Insulated Pipe w/1 1/2" Non-Barrier Pex 3 Wrap 5" Tile	$16.43
WSD-IPAP1.00CTL3W	Insulated pipe with 1.00" PEX-AL-PEX 3 wrap 5" Tile	$11.11
WSD-EC4	4" end cap	$18.11
WSD-EC5	5" end cap	$20.33

** **No Returns on cut to length or special orders.**

WSD Insulated Special Order Pex Pipe

5 WRAP

Assembled in the USA
with foreign and domestic parts





(2) Pex wrapped in 5 layers of closed-cell reflective insulation and fed inside 5" or 6" flexible non-perforated drain tile. We will cut to length in 5' increments. Dimensionally built to F876/877 standard.

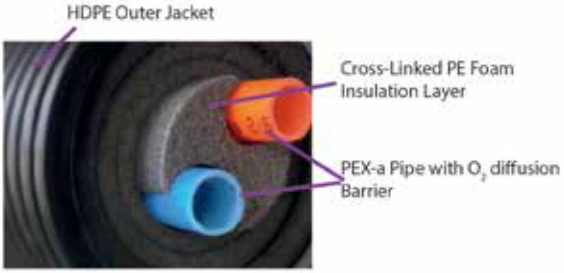
Part Number	Description	Price per Ft
WSD-EZ0.7502BCTL5W	Insulated Pipe w/0.75" Oxygen Barrier Pex 5 wrap	$12.29
WSD-EZ1.0002BCTL5W	Insulated Pipe w/1" Oxygen Barrier Pex 5 wrap	$15.44
WSD-EZ1.2502BCTL5W	Insulated Pipe w/1 1/4" Oxygen Barrier Pex 5 wrap	$18.00
WSD-EZ1.5002BCTL5W	Insulated Pipe w/1 1/2" Oxygen Barrier Pex 5 wrap	$21.15
WSD-EZ0.75NBCTL5W	Insulated Pipe w/3/4" Non-Barrier Pex 5 Wrap	$11.32
WSD-EZ1.00NBCTL5W	Insulated Pipe w/1.00" Non-Barrier Pex 5 Wrap	$14.26
WSD-EZ1.25NBCTL5W	Insulated Pipe w/1 1/4" Non-Barrier Pex 5 Wrap	$16.13
WSD-EZ1.50NBCTL5W	Insulated Pipe w/1 1/2" Non-Barrier Pex 5 Wrap	$18.58
WSD-IPAP1.00CTL5W	Insulated pipe with 1.00" PEX-AL-PEX 5 wrap	$14.95
WSD-EC5	5" END CAPWSD-EZ0.7502BCTL5W	$20.33

WSD Terre-Pex Insulated Pipe System

Product Properties

HDPE Outer Jacket
This corrugated high density polyethylene casing provides the necessary mechanical protection and water sealant properties, and is shock-resistant, even at sub-zero temperatures

Insulation Properties
The insulation of Terre-Pex pipes is fully composed of micro-cellular cross linked polyethylene foam with a closed cellular structure, permitting low water vapor diffusion, good insulation and resistance to extreme temperatures and is not water soluble like competition using polyurethane.



Pex-A Pipe
Plastic pipes have more than proved their quality in recent years. They are flexible, heat and pressure resistant, non-corrosive and lightweight. The Terre-Pex pipe is supplied with pipes manufactured according to the Engel process.





Applications

Terre-Pex Piping Systems are a complete line of flexible piping from 1" to 4" in size with all required accessories for cost effective and permanent installations of:

- **District Heating and Cooling** — running hydronic lines between buildings with minimal energy losses, through unheated spaces, and for extending traditional distribution systems easily and economically
- **Underground Piping Systems** — direct burial of lines up to 328' in length without joints for chilled water, condenser water, or any subterranean system requiring minimal heat gains/losses
- **Plumbing Systems** — for networked cold, hot, and recirculated water lines between buildings, to external or remote facilities such barns, animal sheds, etc.
- **Radiant & snowmelting Systems** — for feeding remote manifold boxes or adding onto existing systems
- **Interior Building Piping** — to provide the quickest and most guaranteed installation of piping systems with no couplings or joints, already insulated to save time and money at the jobsite, and allow maximum flexibility of carrier pipes through difficult spaces.

WSD Terre-Pex Insulated Pipe System

Terre-Pex Insulated Pipe System

Terre-Pex Insulated Pipes are the ideal solution for delivery of hot and chilled water where the energy preservation is key. Terre-Pex insulated piping provides the highest bending flexibility in the industry and thus minimizes overhead in project related pipe system considerations.

We differentiate Terre-Pex insulated pipes with either single or double carrier pipes for convenient supply and return piping based on project needs.

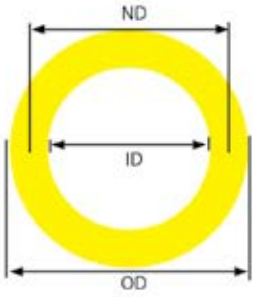
Terre-Pex insulated pex-A pipe can be delivered in any length required up to full coils of 328 feet. ComfortPro Systems provides a cut-to-length quick ship service for your project's needs. With a wide selection of pipe diameters in stock CPS can provide the right solution for your application requirements.

ComfortPro Systems also offers a full selection of ipe matching brass fittings 1" to 4" (110mm

Energy Efficiency of Terre-Pex Pipes (R-Value)

Insulation Efficiency is commonly referred to as R-value. The tables below show R-Values for Terre-Pex Single and Double pipes.

Nomenclature Diameters



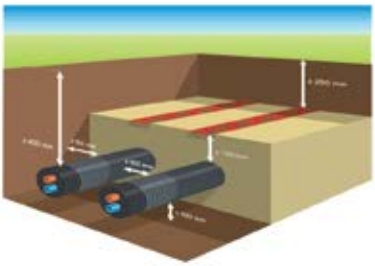
ND = Nominal Diameter
ID = Internal Diameter
OD = Outer Diameter

Single Heating Pipes

Part #	Jacket Pipe OD in	Medium Pipe OD in	$ in	ID in	Bending radius in	Water content gal/100ft	Heat capacity Btu/hr	R-value Btu/hr/ft/°F
WSD32mmSL	3.5	1.26	0.11	1.03	9.8	4.34	205	7.064
WSD1.25SL	5.5	1.57	0.15	1.28	13.8	6.72	307	6.868
WSD1.5SL	5.5	1.97	0.18	1.61	15.7	10.53	478	6.868
WSD2.0SL	6.3	2.48	0.23	2.02	21.7	16.71	751	6.434
WSD2.5SL	6.3	2.95	0.27	2.42	29.5	23.85	1126	5.229
WSD3.0SL	7.9	3.54	0.32	2.90	43.3	34.27	1638	5.227
WSD4.0SL	7.9	4.33	0.39	3.54	47.2	51.24	2388	3.889

Double Heating Pipes

Part #	Jacket Pipe OD in	Medium Pipe OD in	$ in	ID in	Bending radius in	Water content gal/100ft	Heat capacity Btu/hr	R-value Btu/hr/ft/°F
WSD28mmDL	5.5	0.98	0.09	0.80	13.8	5.26	1.02	7.109
WSD32mmDL	5.5	1.26	0.11	1.03	15.7	8.68	205	5.661
WSD1.25DL	6.3	1.57	0.15	1.28	23.6	13.45	307	5.468
WSD1.5DL	6.3	1.97	0.18	1.61	23.6	21.06	478	3.918
WSD2.0DL	7.9	2.48	0.23	2.02	47.2	33.42	751	3.595



Quick Installation

1. Simply dig a trench (Minimum 24" deep)
2. Place 6" of sand into trench
3. Lay the Terre-Pex pipe in the trench
4. Cover over with fine ea th or sand
5. Connect to appliance or wall outlet, e.g. boiler or heat exchanger

No compensation elements needed since the pipe moves inside the HDPE jacket with temperature.

WSD Terre-Pex Insulated Pipe System



Description	Part Number	Qty.	List Price
32mm Single Insulated Pex 90mm Outer Jacket	WSD32mmSL	1	$17.60
1-1/4" 40mm Single Insulated Pex 140mm Outer Jacket	WSD1.25SL	1	$25.88
1-1/2" 50mm Single Insulated Pex 140mm Outer Jacket	WSD1.5SL	1	$29.04
2" 63mm Single Insulated Pex 160mm Outer Jacket	WSD2.0SL	1	$41.30
2-1/2" 75mm Single Insulated Pex 160mm Outer Jacket	WSD2.5SL	1	$42.62
3" 90mm Single Insulated Pex 200mm Outer Jacket	WSD3.0SL	1	$57.07
4" 110mm Single Insulated Pex 200mm Outer Jacket	WSD4.0SL	1	$400.13



Description	Part Number	Qty.	List Price
28mm Double Insulated Pex 140mm Outer Jacket	WSD28mmDL	1	$26.03
32mm Double Insulated Pex 140mm Outer Jacket	WSD32mmDL	1	$26.03
1-1/4" 40mm Double Insulated Pex 160mm Outer Jacket	WSD1.25DL	1	$38.70
1-1/2" 50mm Double Insulated Pex 160mm Outer Jacket	WSD1.5DL	1	$44.49
2" 63mm Double Insulated Pex 200mm Outer Jacket	WSD2.0DL	1	$66.93



Description	Part Number	Qty.	List Price
32mm NPT Pex Connector	WSDHC32mmPEXCON	1	$64.59
1-1/4" NPT 40mm Pex Connector	WSDHC1.25PEXCON	1	$106.85
1-1/2" NPT 50mm Pex Connector	WSDHC1.5PEXCON	1	$121.42
2" NPT 63mm Pex Connector	WSDHC2.0PEXCON	1	$173.70
2-1/2" NPT 75mm Pex Connector	WSDHC2.5PEXCON	1	$271.60
3" NPT 90mm Pex Connector	WSDHC3.0PEXCON	1	$449.13
4" NPT 110mm Pex Connector	WSDHC4.0PEXCON	1	$534.21

Operating Range

- Pressures of up to 87 Psi in heating applications with PEX piping from 1" to 4" diameter
- Pressure of up to 140 Psi in plumbing applications with PEX piping from 1" to 2 1/2" diameter

Couplings can be combined withother brass accessories to make T- and knee couplings, connecting pieces, etc.

ALL ITEMS SPECIAL ORDER

WSD Dust & Shrink Caps



Single Pipe Dust Caps

Description	Part Number	Qty.	List Price
1" 32mm Single Dust Cap 90mm OD	WSD32MMDC	1	$29.34
1-1/4" 40mm Single Dust Cap 140mm OD	WSD1.25DC	1	$29.34
1-1/2" 50mm Single Dust Cap 140mm OD	WSD1.5DC	1	$29.34
2" 63mm Single Dust Cap 160mm OD	WSD2.0DC	1	$29.34
2-1/2" 75mm Single Dust Cap 160mm OD	WSD2.5DC	1	$29.34
3" 90mm Single Dust Cap 200mm OD	WSD3.0DC	1	$29.34
4" 110mmSingle Dust Cap 200mm OD	WSD4.0DC	1	$29.34



Double Pipe Dust Caps

Description	Part Number	Qty.	List Price
1" 32mm Double Dust Cap 140mm OD	WSD32MMDDC	1	$29.34
1-1/4" 40mm Double Dust Cap 160mm OD	WSD1.25DDC	1	$29.34
1-1/2" 50mm Double Dust Cap 160mm OD	WSD1.5DDC	1	$29.34
2" 63mm Double Dust Cap 200mm OD	WSD2.0DDC	1	$29.34



Single Pipe Shrink Caps

Description	Part Number	Qty.	List Price
Single 1-1/4" & 1-1/2" Shrink Cap	WSD1.25-1.5SSC	1	$100.42
Single 2" & 2-1/2" Shrink Cap	WSD2.0-2.5SSC	1	$129.11
Single 3" & 4" Shrink Cap	WSD3.0-4.0SSC	1	$153.56



Double Pipe Shrink Caps

Description	Part Number	Qty.	List Price
1" Double Shrink Cap 140mm OD	WSD1.0DSC	1	$351.46
1-1/4" Double Shrink Cap 160mm OD	WSD1.25DSC	1	$342.00
1-1/2" Double Shrink Cap160mm OD	WSD1.5DSC	1	$372.63
2" Double Shrink Cap 200mm OD	WSD2.0DSC	1	$372.63

ALL ITEMS SPECIAL ORDER

WSD Wall Feed-Throughs & Sleeves



Shrink Sleeves (SSL series)

Description	Part Number	Qty.	List Price
90mm & 110mm Shrink Sleeve 225mm long	WSDSSL90MM-110MM	1	$38.06
140mm & 160mm Shrink Sleeve 225mm long	WSDSSL140MM-160MM	1	$46.04
200mm & 225mm Shrink Sleeve 225mm long	WSDSSL200MM-225MM	1	$80.84

Terre-Pex SINGLE and DOUBLE pipe Shrink Sleeve for HDPE jacket repair. An easy to use way to seal small cuts or damages to the outer jacket. The Terre-Pex shrink sleeve provides leakage protection into the insulation layer.



R Series Repair Tape

Description	Part Number	Qty.	List Price
200mm wide 10mm long	WSDRTAPE200MM	1	$323.57
150mm wide 10mm long	WSDRTAPE150MM	1	$687.85

ALL ITEMS SPECIAL ORDER

WSD Pex Barbed Fittings - Lead Free
ASTM F1807 Fittings NSF-PW Approved

Tees	Part Number	List Price Each
1/2" Barbed	BT4	$2.04
3/4" Barbed	BT6	$3.59
1" Barbed	BT7	$6.29
1-1/4" Barbed	BT8	$21.94
1-1/2" Barbed	BT9	$42.99
2" Barbed	BT10	$62.87
Elbows	**Part Number**	**List Price Each**
3/8" Barbed	BL3	$1.83
1/2" Barbed	BL4	$1.53
3/4" Barbed	BL6	$2.59
1" Barbed	BL7	$4.92
1-1/4" Barbed	BL8	$14.08
1-1/2" Barbed	BL9	$36.53
2" Barbed	BL10	$41.92
Female Threaded Adapters	**Part Number**	**List Price Each**
3/8" x 1/2" FPT	BC3FPT4	$2.56
1/2" Barbed x 1/2" FPT	BC4FPT4	$2.91
3/4" Barbed x 3/4" FPT	BC6FPT6	$3.75
1" Barbed x 1" FPT	BC7FPT7	$6.45
1-1/4" Barbed x 1-1/4" FPT	BC8FPT8	$36.32
1-1/2" Barbed x 1-1/2" FPT	BC9FPT9	$58.23
3/8" Barbed x 12" MPT	BC3MPT4	$1.92
Male Threaded Adapters	**Part Number**	**List Price Each**
1/2" Barbed x 1/2" MPT	BC4MPT4	$2.20
3/4" Barbed x 3/4" MPT	BC6MPT6	$3.18
1" Barbed x 1" MPT	BC7MPT7	$5.70
1-1/4" Barbed x 1-1/4" MPT	BC8MPT8	$10.34
1-1/2" Barbed x 1-1/2" MPT	BC9MPT9	$23.51
Couplings	**Part Number**	**List Price Each**
3/8" Barbed	BC3	$0.83
1/2" Barbed	BC4	$1.17
3/4" Barbed	BC6	$1.17
1" Barbed	BC7	$3.18
1-1/4" Barbed	BC8	$7.24
1-1/2" Barbed	BC9	$22.89
2" Barbed	BC10	$26.51
Male Sweat Adapters (Spigot)	**Part Number**	**List Price Each**
1/2" Barbed x 1/2" CU Spigot	BC4SM4	$1.17
5/8" Barbed x 3/4" CU Spigot	BC5SM6	$2.22
3/4" Barbed x 3/4" CU Spigot	BC6SM6	$2.17
1" Barbed x 1" CU Spigot	BC7SM7	$3.80

Call for availability.













WSD Pex Barbed Fittings
ASTM F1807 Fittings NSF-PW Approved

Female Sweat Adapt. (Socket)	Part Number	List Price Each
1/2″ Barbed x 1/2″ CU Socket	BC4SF4	$1.37
5/8" Barbed x 3/4" CU Socket	BC5SG6	$2.22
3/4″ Barbed x 3/4″ CU Socket	BC6SF6	$3.18
1″ Barbed x 1″ CU Socket	BC7SF7	$5.70
1-1/4"x1-1/4" CU Socket	BC8SF8	$10.34
Sweat Adapter Elbows	**Part Number**	**List Price Each**
1/2" Barbed x 1/2" CU Socket	BL4SF4	$2.73
Plugs	**Part Number**	**List Price Each**
3/8" Barbed Plug	BP3	$0.53
1/2″ Barbed x Plug	BP4	$0.78
3/4″ Barbed x Plug	BP6	$1.26
1″ Barbed x Plug	BP7	$2.15
1-1/4" Barbed Plug	BP8	$8.02
1-1/2" Barbed Plug	BP9	$27.19
2" Barbed Plug	BP10	$30.69
Crimp Rings	**Part Number**	**List Price Each**
3/8"	BR3	$0.28
1/2″	BR4	$0.38
3/4″	BR6	$0.44
1″	BR7	$0.85
1-1/4″	BR8 *	$2.61
1-1/2"	BR9	$5.54
2"	BR10	$10.21
Stainless Steel Cinch Clamps	**Part Number**	**List Price Each**
3/8"	BCC3	$0.31
1/2″	BCC4	$0.35
5/8"	BCC5	$0.64
3/4″	BCC6	$0.54
1″	BCC7	$0.73
Pex Pipe Clamp Hex Key	**Part Number**	**List Price Each**
1″	PPC7 *	$4.62
1 1/4″	PPC8 *	$6.51
1 1/2″	PPC9 *	$10.00

Call for availability.













*** Special Order**

WSD Fittings - F-2159 PPSU - Plastic



Plastic Plastic Barb Coupling

Description	Part Number	Qty./Bag	List Price
1/2" x 1/2" Barb Coupling	AC4	50	$0.55
3/4" x 1/2" Barb Coupling	AC64	50	$0.54
3/4" x 3/4" Barb Coupling	AC6	50	$0.82
1" x 3/4" Barb Coupling	AC76	25	$1.55
1" x 1" Barb Coupling	AC7	25	$1.54



Plastic Swivel Coupling

Description	Part Number	Qty./Bag	List Price
3/8" Barb x 1/2" Swivel Coupling	AC3FPT4	50	$2.55
1/2" Barb x 1/2" Swivel Coupling	AC4FPT4	50	$1.53
3/4" Barb x 3/4" Swivel Coupling	AC6FPT6	50	$1.75



Plastic Barbed Male Adapter

Description	Part Number	Qty./Bag	List Price
1/2" Barb x 1/2" MPT Straight Adpter	AC4MPT4	100	$0.89
1/2" Barb x 3/4" MPT Straight Adpter	AC4MPT6	50	$1.08
3/4" Barb x 3/4" MPT Straight Adpter	AC6MPT6	100	$1.15



Plastic Barbed Plugs

Description	Part Number	Qty./Bag	List Price
3/8" Barb Plug	AP3	50	$0.53
1/2" Barb Plug	AP4	25	$0.57
3/4" Barb Plug	AP6	25	$0.69
1" Barb Plug	AP7	25	$1.07

WSD Fittings F-2159 PPSU Plastic



Plastic Elbows

Description	Part Number	Qty./Bag	List Price
1/2" Barb Elbow	AL4	50	$0.70
3/4" Barb x 1/2" Barb ELL	AL64	50	$0.96
3/4" Barb Elbow	AL6	50	$1.03
1" Barb Elbow	AL7	25	$3.24

WSD plastic fittings are manufactured to ASTM F2159 and CSA B137.5 standards and approved by CSA, IAPMO and NSF.



Plastic Swivel Elbows

Description	Part Number	Qty./Bag	List Price
1/2" Barb x 1/2" Swivel ELL	AL44SWELL	50	$2.04
3/4" Barb x 3/4" Swivel ELL	AL66SWELL	50	$2.96



Plastic Barbed 90 Degree Adapter

Description	Part Number	Qty./Bag	List Price
1/2" Barb x 3/8" MPT 90 Deg. Adapter	4AL3MPT	25	$1.08
1/2" Barb x 1/2" MPT 90 Deg. Adapter	4AL4MPT	25	$1.08
3/4" Barb x 3/4" MPT 90 Deg. Adapter	6AL6MPT	25	$1.64



Plastic Barbed Tees

Description	Part Number	Qty./Bag	List Price
1/2" x 1/2" x 1/2" Barb Tee	AT4	50	$1.31
3/4" x 3/4" x 3/4" Barb Tee	AT6	50	$1.88
1" x 1" x 1" Barb Tee	AT7	25	$3.71
1/2" x 1/2" x 3/4" Barb Tee	AT446	50	$1.88
3/4" x 1/2" x 1/2" Barb Tee	AT644	50	$1.88
3/4" x 1/2" x 3/4" Barb Tee	AT646	50	$1.88
3/4" x 3/4" x 1/2" Barb Tee	AT664	50	$1.88
1" x 1" x 1/2" Barb Tee	AT774	25	$3.71
1" x 3/4" x 3/4" Barb Tee	AT766	25	$3.71
1" x 3/4" x 1" Barb Tee	AT767	25	$3.71
1" x 1" x 3/4" Barb Tee	AT776	25	$3.71

WSD Fittings - F1960 Brass



Pex Sleeves

Description	Part Number	Qty./Bag	List Price
1/2" F1960 PEX Ring	UP4S	50	$0.23
3/4" F1960 PEX Ring	UP6S	25	$0.42
1" F1960 PEX Ring	UP7S	10	$0.78
1 1/4" F1960 Pex Sleeve	UP8S	10	$0.99
1 1/2" F1960 Pex Sleeve	UP9S	10	$1.31
2" F1960 Pex Sleeve	UP10S	10	$2.39

WSD cold expansion F1960 lead free brass fittings conform to ASTM F877, F1960, NSF-61 PW-G, CAN/CSA B137.5 standards.



Elbows

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" F1960 Elbow NL	UPL4	50	$7.08
3/4" F1960 x 3/4" F1960 Elbow NL	UPL6	25	$11.70
1" F1960 x 1" F1960 Elbow NL	UPL7	10	$26.53
3/4" F1960 x 3/4" CU Male (Fitting) Elbow NL	UPL6MPT6	25	$12.75
3/4" F1960 x 3/4" CU Female (Sweat) Elbow NL	UPL6SF6	25	$14.46
1/2"F1960 x 1/2" FIP Drop Ear 90 NL	UPL4FPT4DE	25	$14.46



Tees

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" F1960 x 1/2" F1960 Tee NL	UPT4	50	$10.09
3/4" F1960 x 3/4" F1960 x 3/4" F1960 Tee NL	UPT6	25	$16.44
1" F1960 x 1" F1960 x 1" F1960 Tee NL	UPT7	10	$30.37
1/2" F1960 x 1/2" F1960 x 3/4" F1960 Tee NL	UPT446	25	$16.82
3/4" F1960 x 1/2" F1960 x 1/2" F1960 Tee NL	UPT644	25	$16.50
3/4" F1960 x 1/2" F1960 x 3/4" F1960 Tee NL	UPT646	25	$18.57
3/4" F1960 x 3/4" F1960 x 1/2" F1960 Tee NL	UPT664	25	$17.21
3/4" F1960 x 3/4" F1960 x 1" F1960 Tee NL	UPT667	10	$40.84
1" F1960 x 3/4" F1960 x 3/4" F1960 Tee NL	UPT766	10	$31.87
1" F1960 x 1" F1960 x 1/2" F1960 Tee NL	UPT774	10	$30.37
1" F1960 x 1" F1960 x 3/4" F1960 Tee NL	UPT776	10	$30.37

WSD Fittings - F1960 No Lead Brass



Couplings

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" F1960 Coupling NL	UP4	50	$5.98
3/4" F1960 x 3/4" F1960 Coupling NL	UP6	25	$9.16
1" F1960 x 1" F1960 Coupling NL	UP7	2	$16.68
3/4" F1960 x 1/2" F1960 Coupling NL	UP64	25	$9.37
1" F1960 x 3/4" F1960 Coupling NL	UP76	10	$14.12



Male Sweat Adapter

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" CU Male (Fitting) NL	UP4SM4	50	$3.74
3/4" F1960 x 1/2" CU Male (Fitting) NL	UP6SM4	25	$8.61
3/4" F1960 x 3/4" CU Male (Fitting) NL	UP6SM6	25	$8.22
3/4" F1960 x 1" CU Male (Fitting) NL	UP6SM7	10	$11.57



Female Sweat Adapter

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" CU Female (Sweat) NL	UP4SF4	50	$3.83
1/2" F1960 x 3/4" CU Female (Sweat) NL	UP4SF6	25	$8.44
3/4" F1960 x 1/2" CU Female (Sweat) NL	UP6SF4	25	$9.10
3/4" F1960 x 3/4" CU Female (Sweat) NL	UP6SF6	25	$8.22
3/4" F1960 x 1" CU Female (Sweat) NL	UP6SF7	10	$13.93
1" F1960 x 1" CU Female (Sweat) NL	UP7SF7	10	$14.98

WSD Fittings - F1960 Brass



PEX × MPT Adaptors

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" MPT Adapter NL	UP4MPT4	50	$5.31
3/4" F1960 x 3/4" MPT Adapter NL	UP6MPT6	25	$9.83
3/4" F1960 x 1" MPT Adapter NL	UP6MPT7	10	$15.93
1" F1960 x 1" MPT Adapter NL	UP7MPT7	25	$18.87



FIP and FPT Adapter

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" FPT Adapter NL	UP4FPT4	50	$9.39
3/4" F1960 x 1/2" FPT Adapter NL	UP6FPT4	25	$10.47
3/4" F1960 x 3/4" FPT Adapter NL	UP6FPT6	25	$13.27
3/4" F1960 x 1" FPT Adapter NL	UP6FPT7	10	$17.78
1" F1960 x 1" FPT Adapter NL	UP7FPT7	10	$21.05



Plugs

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x Plug NL	UPP4	50	$3.74
3/4" F1960 x Plug NL	UPP6	25	$6.02
1" F1960 x Plug NL	UPP7	10	$10.42



Ball Valves

Description	Part Number	Qty./Bag	List Price
1/2" F1960 Full Port Ball Valve NL	UP4FPBV4	1	$38.68
3/4" F1960 Full Port Ball Valve NL	UP6FPBV6	1	$62.68
1" F1960 Full Port Ball Valve NL	UP7FPBV7	1	$106.13

WSD Fittings - F1960 Plastic Poly



Elbows

Description	Part Number	Qty./Bag	List Price
Poly 1/2" F1960 x 1/2" F1960 Elbow	UPL4POLY	25	$1.92
Poly 3/4" F1960 x 3/4" F1960 Elbow	UPL6POLY	25	$2.47
Poly 1" F1960 x 1" F1960 Elbow	UPL7POLY	10	$5.02
Poly 1 1/4" x 1 1/4" F1960 90 Degree Elbow	UPL8POLY	5	$8.30
Poly 1 1/2" x 1 1/2" F1960 90 Degree Elbow	UPL9POLY	5	$12.63
Poly 2" x 2" F1960 90 Degree Elbow	UPL10POLY	5	$37.89

WSD cold expansion F1960 Plastic Poly fittings conform to ASTM F877, F1960, NSF-61 PW-G, CAN/CSA B137.5 standards.



Couplings

Description	Part Number	Qty./Bag	List Price
Poly 1/2" F1960 x 1/2" F1960 Coupling	UP4POLY	25	1.54
Poly 3/4" F1960 x 3/4" F1960 Coupling	UP6POLY	25	$1.97
Poly 1" F1960 x 1" F1960 Coupling	UP7POLY	25	$3.18
Poly 3/4" F1960 x 1/2" F1960 Coupling	UP64POLY	25	$3.36
Poly 1" F1960 x 3/4" F1960 Coupling	UP76POLY	10	$2.38
Poly 1" F1960 x 1/2" F1960 Coupling	UP74POLY	10	$2.57
Poly 1 1/4" F1960 x 1 1/4" F1960 Coupling	UP88POLY	5	$6.68
Poly 1 1/4" F1960 x 3/4" F1960 Coupling	UP86POLY	5	$6.23
Poly 1 1/4" F1960 x 1" F1960 Coupling	UP87POLY	5	$6.72
Poly 1 1/2" F1960 x 1 1/2" F1960 Coupling	UP99POLY	5	$11.60
Poly 1 1/2" F1960 x 1 1/4" F1960 Coupling	UP98POLY	5	$9.88
Poly 2" F1960 x 2" F1960 Coupling	UP1010POLY	5	$20.44
Poly 2" F1960 x 1 1/2" F1960 Coupling	UP109POLY	5	$24.22



Plugs

Description	Part Number	Qty./Bag	List Price
Poly 1/2" F1960 Plug	UPP4PLUG	25	$1.22
Poly 3/4" F1960 Plug	UPP6PLUG	25	$1.92
Poly 1" F1960 Plug	UPP7PLUG	10	$2.50
Poly 1 1/4" F1960 Plug	UPP8PLUG	5	$6.50
Poly 1 1/2" F1960 Plug	UPP9PLUG	5	$6.01
Poly 2" F1960 Plug	UPP10PLUG	5	$23.03

WSD Fittings - F1960 Plastic Poly



Tees

Description	Part Number	Qty./Bag	List Price
Poly 1/2" F1960 x 1/2" F1960 x 1/2" F1960 Tee	UPT4POLY	25	$1.92
Poly 3/4" F1960 x 3/4" F1960 x 3/4" F1960 Tee	UPT6POLY	25	$3.20
Poly 1" F1960 x 1" F1960 x 1" F1960 Tee	UPT7POLY	10	$5.77
Poly 1/2" F1960 x 1/2" F1960 x 3/4" F1960 Tee	UPT446POLY	25	3.02
Poly 3/4" F1960 x 1/2" F1960 x 1/2" F1960 Tee	UPT644POLY	25	3.02
Poly 3/4" F1960 x 1/2" F1960 x 3/4" F1960 Tee	UPT646POLY	25	3.02
Poly 3/4" F1960 x 3/4" F1960 x 1/2" F1960 Tee	UPT664POLY	25	$2.56
Poly 1" F1960 x 1" F1960 x 3/4" F1960 Tee	UPT776POLY	10	$3.83
Poly 1" F1960 x 1" F1960 x 1/2" F1960 Tee	UPT774POLY	10	$5.88
Poly 1" F1960 x 3/4" F1960 x 3/4" F1960 Tee	UPT766POLY	10	$4.27
Poly 1" F1960 x 3/4" F1960 x 1" F1960 Tee	UPT767POLY	10	$5.12
Poly 1 1/4" F1960 x 1 1/4" F1960 x 1 1/4" F1960 Tee	UPT888POLY	5	$11.55
Poly 1 1/4" F1960 x 1" F1960 x 1 1/4" F1960 Tee	UPT878POLY	5	$11.32
Poly 1 1/4" F1960 x 1 1/4" F1960 x 1/2" F1960 Tee	UPT884POLY	5	$10.01
Poly 1 1/4" F1960 x 1 1/4" F1960 x 3/4" F1960 Tee	UPT886POLY	5	$7.13
Poly 1 1/4" F1960 x 1 1/4" F1960 x 1" F1960 Tee	UPT887POLY	5	$11.14
Poly 1 1/2" F1960 x 1 1/2" F1960 x 1 1/2" F1960 Tee	UPT9POLY	5	$10.64
Poly 1 1/2" F1960 x 1 1/2" F1960 x 1 1/4" F1960 Tee	UPT998POLY	5	$16.69
Poly 1 1/2" F1960 x 1 1/4" F1960 x 1 1/2" F1960 Tee	UPT989POLY	5	$16.83
Poly 1 1/2" F1960 x 1 1/2" F1960 x 3/4" F1960 Tee	UPT996POLY	5	$13.44
Poly 1 1/2" F1960 x 1 1/2" F1960 x 1" F1960 Tee	UPT997POLY	5	$13.98
Poly 1 1/2" F1960 x 1 1/2" F1960 x 1 1/4" F1960 Tee	UPT998POLY	5	$16.69
Poly 2" F1960 x 2" F1960 x 2" F1960 Tee	UPT10	5	$55.33
Poly 2" F1960 x 1 1/2" F1960 x 2" F1960 Tee	UPT10910PO L Y	5	$56.42
Poly 2" F1960 x 2" F1960 x 1" F1960 Tee	UPT10107PO L Y	5	$49.74
Poly 2" F1960 x 2" F1960 x 1 1/4" F1960 Tee	UPT10108PO L Y	5	$52.02
Poly 2" F1960 x 2" F1960 x 1 1/2" F1960 Tee	UPT10109PO L Y	5	$52.99



Adapters

Description	Part Number	Qty./Bag	List Price
1/2" F1960 x 1/2" MPT Adapter	UP4MPT4POLY	25	$2.81
3/4" F1960 x 3/4" MPT Adapter	UP6MPT6POLY	25	$3.13

WSD Brass Fittings For Heating Only





PEX to Sweat Adapters

Description	Part Number	Qty./Bag	List Price
1/2" PEX x1/2" Sweat Adapter	CP4SM4	25	$9.57
5/8" PEX x 3/4" Sweat Adapter	CP5SM6	25	$14.01
3/4" PEX x 3/4" Sweat Adapter	CP6SM6	25	$13.68
1/2" PEX x 1/2" Female Sweat Adapter	CP4SF4	25	$9.88
5/8" PEX x 3/4" Female Sweat Adapter	CP5SF6	25	$11.25
1/2" PEX x 1/2" Sweat 90 Degree Elbow	CP4SMELL4	25	$21.34
5/8" PEX x 3/4" Fem. Sweat 90 Degree Elbow	CP5SFELL6	25	$30.75
3/4" PEX x 3/4" Fem Sweat 90 Degree Elbow	CP6SFELL6	25	$24.23
1/2" PEX x 3/4" Female Sweat Adapter	CP4SF6	25	$10.20
1/2" PEX x 3/4" Sweat 90 Degree Elbow	CP4SMELL6	25	$20.67



PEX Compression to MIP Adapters

Description	Part Number	Qty./Bag	List Price
3/8" PEX x 1/2" MIP Adapter	CP3MPT4	25	$8.79
1/2" PEX x 1/2" MIP Adapter	CP4MPT4	25	$8.56
5/8" PEX x 3/4" MIP Adapter	CP5MPT6	25	$10.08
3/4" PEX x 3/4" MIP Adapter	CP6MPT6	25	$11.02



PEX Compression Couplings

Description	Part Number	Qty./Bag	List Price
3/8" PEX Pipe Coupling	CCP3	25	$11.89
1/2" PEX Pipe Coupling	CCP4	25	$12.16
5/8" PEX Pipe Coupling	CCP5	25	$13.92
3/4" PEX Pipe Coupling	CCP6	25	$17.34
1" PEX Pipe Coupling	CCP7	25	$24.69

Note: For hydronic system use only. Not intended for potable water systems.

ALL ITEMS SPECIAL ORDER

WSD (PEX-AL-PEX) Compression Fittings ASTM F1281 For Heating Only

Call for availability.

Tees	Part Number	List Price Each
3/4" PAP Comp.	CT6	$25.83
1" PAP Comp.	CT7	$40.45
Elbows	**Part Number**	**List Price Each**
3/4" PAP Comp.	CL6	$19.03
1"PAP Comp.	CL7	$25.83
Male Elbow	**Part Number**	**List Price Each**
3/4" PAP Comp. x 3/4" MNPT	CL6MPT6	$13.61
1" PAP Comp. x 1" MNPT	CL7MPT7	$21.77
Female Adapters	**Part Number**	**List Price Each**
3/4" PAP Comp. 3/4" FNPT	CC6FPT6	$11.46
1" PAP Comp. x 1" FNPT	CC7FPT7	$21.88
Male Adapters	**Part Number**	**List Price Each**
1/2" PAP Comp. 1/2" MNPT	CC4MPT4	$6.60
5/8" PAP Comp. 3/4" MNPT	CC5MPT6	$9.20
3/4" PAP Comp. 3/4" MNPT	CC6MPT6	$12.26
3/4" PAP Comp. 1" MNPT	CC6MPT7	$13.23
1" PAP Comp. x 1" MNPT	CC7MPT7	$19.26
Couplings	**Part Number**	**List Price Each**
3/8" Comp. x 3/8" Comp.	CC3 *	$9.26
1/2" Comp. x 1/2" Comp	CC4	$9.10
3/4" Comp. x 3/4" Comp.	CC6	$19.38
1" Comp. x 1" Comp.	CC7	$27.77











* While They Last

WSD (PEX-AL-PEX) Compression Fittings ASTM F1281 For Heating Only

Call for availability.

Sweat Adapter – Male (Spigot)	Part Number	List Price Each
3/8" Comp. x 1/2" CU Spigot	CC3SM4 ✖	$7.05
1/2" Comp. x 3/4" CU Spigot	CC4SM6 ✖	$7.74
3/4" Comp. x 3/4" CU Spigot	CC6SM6	$13.96
3/4" Comp. x 1" CU Spigot	CC6SM7 ✖	$14.97
1" Comp. x 1" CU Spigot	CC7SM7	$19.03



Sweat Adapter – Female (Socket)	Part Number	List Price Each
3/8" Comp. x 1/2" CU Socket	CC3SF4 ✖	$7.01
1/2" Comp. x 1/2" CU Socket	CC4SF4	$6.25
5/8" Comp. x 3/4" CU Socket	CC5SF6	$11.87
3/4" Comp. x 3/4" CU Socket	CC6SF6	$13.80
1" Comp. x 1" CU Socket	CC7SF7	$20.90



Plugs	Part Number	List Price Each
1/2" PAP Comp. x Plug	CP4 ✖	$6.32
5/8" PAP Comp. x Plug	CP5 ✖	$8.26
3/4" PAP Comp. x Plug	CP6 ✖	$13.61
1" PAP Comp. x Plug	CP7 ✖	$19.79



✖ While They Last

WSD Press Fittings For ASTM F1281 (PEX-AL-PEX Pipe) For Heating Only

Call for availability.

Tees	Part Number	List Price Each
1/2" Press ✖	PT4	$8.74
3/4" Press	PT6	$18.22
1" Press	PT7	$25.41
1/2"x1/2"x3/4" Press ✖	PT446	$12.70
3/4"x1/2"x1/2" Press ✖	PT644	$13.01
3/4"x1/2"x3/4" Press ✖	PT646	$15.86
3/4"x3/4"x1/2" Press ✖	PT664	$14.47
3/4"x3/4"x1" Press ✖	PT667	$21.03
1"x1/2"x3/4" Press ✖	PT746	$19.58
1"x1/2"x1/2" Press ✖	PT744	$15.62
1"x3/4"x3/4" Press ✖	PT766	$21.03
1"x3/4"x1" Press ✖	PT767	$24.93
1"x1"x3/4" Press ✖	PT776	$22.74



Elbows	Part Number	List Price Each
1/2" Press	PL4	$7.45
3/4" Press	PL6	$15.65
1" Press	PL7	$17.07



Male Elbows	Part Number	List Price Each
1/2" Press x 1/2" MNPT ✖	PL4MPT4	$8.29
3/4" Press x 3/4" MNPT ✖	PL6MPT6	$13.36



Female Adapters	Part Number	List Price Each
1/2" Press x 1/2" FNPT	PC4FPT4	$7.03
1/2" Press x 3/4" FNPT ✖	PC4FPT6	$7.99
3/4" Press x 1/2" FNPT ✖	PC6FPT4	$8.51
3/4" Press x 3/4" FNPT	PC6FPT6	$11.45
3/4" Press x 1" FNPT ✖	PC6FPT7	$12.73
1" Press x 1" FNPT	PC7FPT7	$17.07
1" Press x 3/4" FNPT ✖	PC7FPT6	$11.52



Transition Fittings	Part Number	List Price Each
3/4" Press x 3/4" Barbed ✖	PC6BC6	$8.50
1" Press x 3/4" Barbed ✖	PC7BC6	$11.42



✖ While They Last

WSD Press fittings are for use in heating only.

Male Adapter	Part Number	List Price Each
1/2" Press x 1/2" MNPT	PC4MPT4	$6.58
1/2" Press x 3/4" MNPT	PC4MPT6	$7.45
5/8" Press x 3/4" MNPT	PC5MPT6	$8.26
3/4" Press x 3/4" MNPT	PC6MPT6	$11.35
3/4" Press x 1" MNPT *	PC6MPT7	$11.24
1" Press x 3/4" MNPT *	PC7MPT6	$13.05
1" Press x 1" MNPT	PC7MPT7	$15.51
Couplings	**Part Number**	**List Price Each**
1/2" Press	PC4	$5.03
5/8" Press	PC5	$6.38
3/4" Press	PC6	$10.81
1" Press	PC7	$14.17
3/4" Press x 1/2" Press *	PC64	$7.49
1" Press x 3/4" Press *	PC76	$11.42
Sweat Adpt. Male (Spigot)	**Part Number**	**List Price Each**
1/2" Press x 1/2" CU Spigot *	PC4SM4	$4.61
1/2" Press 3/4" CU Spigot *	PC4SM6	$6.42
1/2" Press x 3/4" CU Spigot ELBOW *	PL4SM6	$8.71
3/4" Press x 3/4" CU Spigot *	PC6SM6	$8.22
1" Press x 1" CU Spigot *	PC7SM7	$11.31
Sweat Adpt. Female (Socket)	**Part Number**	**List Price Each**
1/2" Press x 1/2" CU Socket	PC4SF4	$4.63
3/4" Press x 3/4" CU Socket	PC6SF6	$9.33
1/2" Press x 3/4" CU Socket	PC4SF6	$10.00
3/4" Press x 1/2" CU Socket *	PC6SF4	$6.52
1/2" Press x 3/4" CU Socket ELBOW	PL4SF6	$10.54
3/4" Press x 3/4" CU Socket ELBOW	PL6SF6	$21.56
1" Press x 1" CU Socket	PC7SF7	$12.29
Drop Ear Elbow (w/plate)	**Part Number**	**List Price Each**
1/2" Press x 1/2" FNPT *	PL4FPT4DE	$11.73
3/4" Press x 3/4" FNPT *	PL6FPT6DE	$18.47
Plugs	**Part Number**	**List Price Each**
1/2" Press Plug *	PP4	$3.50
3/4" Press Plug *	PP6	$7.15
1" Press Plug *	PP7	$10.06

Call for availability.

* While They Last













WSD TOOLS

Crimp Tools	Part Number	List Price
Crimp Gauge	CRIMPGAUGE	$1.31
Combination 1-1/4", 1-1/2", 2" Copper Crimp Ring Tool	COPPERCRIMPRING	$383.54
1/2" Crimp Tool	1/2Crimp	$234.64
1/2" - 3/4" Crimp Tool	1/23/4Crimp	$386.76
3/4" Crimp Tool	3/4Crimp	$279.33
1" Crimp Tool	1Crimp	$386.76
Full circle crimp, c/w crimp gauge, adjustment wrench and instructions.		

Press Tools	Part Number	List Price
Manual Press tool kit 1/2", 5/8",3/4", 1" Inserts	MPT-Kit	$488.28

Assorted Tools	Part Number	List Price
Ratchet Style Pipe Cutter	PRT-CUT	$32.64
PEX Tubing Cutter	PWT-CUT	$22.20
Pipe Reamer 1/2" - 5/8"	PRT-REAM4	$30.00
Pipe Reamer 3/4" - 1"	PRT-REAM6	$30.00

Tubing Staplers and Staples	Part Number	List Price
Reddi Strip Stapler	Reddi Strip Stapler	$466.67
1.525" Staples for the Reddi Strip Box of 200	S5RE-13	$43.33
1.9" Staples for the Reddi Strip Box of 200	S5RE-16	$43.33
Case of 50 boxes of the S5RE-13	S5RE-13CASE	$1,777.78
Case of 50 boxes of the S5RE-16	S5RE-16CASE	$1,777.78
Pneumatic Staple Gun	RB-6	$555.56
1/2" Stand-off Clips for the RB-6	P4BK	$14.48

WSD Stapler	Part Number	List Price
Manual stapler for 1-1/2" and 2-3/8" staples	WSD-TASM-STAPLER	$400.00
300 count box of 2-3/8" staples for use with WSD-TASM-STAPLER	WSD-STAPLE-PB2.38	$62.22
300 count box of 1-1/2" staples for use with WSD-TASM-STAPLER	WSD-STAPLE-PB1.5	$62.22

Portable Pipe Un-coiler	Part Number	List Price
Portable Pipe Un-coiler	Un-coiler	$421.44















WSD Track-Plates



Heat Transfer Plates – VersaPlate

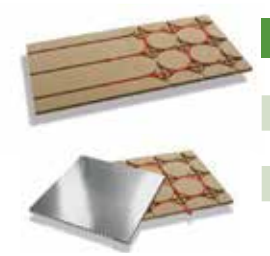
Description	Part Number	Qty./ Bundle	List Price
VersaPlate 24" Steel Heat Transfer Plate	WSDVP24TP	50	$2.08



Heat Transfer Plates – HeatTraK

Description	Part Number	Qty./Box	List Price
HeatTraK 3/8" x 4'	WSDHT3	20	$11.45
HeatTraK 1/2" x 4'	WSDHT4	20	$12.61

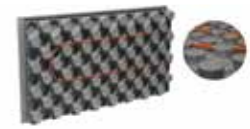
Heat transfer plates are used for Dry Below installations of 3/8",1/2" or 5/8" pex. Plates provide a direct transfer and heat distribution from Pex piping to the underside of a wooden subfloor. HeatTrak simplifies the installation by allowing the pipe to be snapped in place.



WSD ProPanel

Description	Part Number	Qty.	List Price
24 x 24 x 3/4" 1/2" Pipe Straight Run	WSD4SRPEXPAN	1	$27.98
24 x 24 x 3/4" 1/2" Pipe Ultimate Board	WSD4UBPEXPAN	1	$43.32
24 x 24 x 5/8" 3/8" Pipe Straight Run	WSD3SRPEXPAN	1	$27.98
24 x 24 x 5/8" 3/8" Pipe Ultimate Board	WSD3UBPEXPAN	1	$43.32

The new WSD ProPanel radiant heat panels for dry above systems are available for 3/8" and 1/2" pex tubing. ProPanel is available in 24" x 24" with aluminum coating on the bottom of the panels to reflect the heat upwards and the cold down. The panels come in two configurations, straight and turning or what we call the Ultimate panel as it allows turning in any direction without any routing needed. The pipe grooves are specially manufactured on 8 centers so that the pex tubing snaps into the grooves and stays without needing silicone to hold the tubing in place. ProPanel is approved for indoor use manufactured with MDF composite board and is water resistant.



Description	Part Number	Bundle Qty.	List Price
Insulated Pex Panel	AMPEX2015F	20	$21.62

Standard	ASTM C518-10	ASTM D1621-10	ASTM E 96E96M-12	Overall Board Size (lxw)	Usable Size (lxw)	Overall Thickness Including Grid	Pex Pipe Accommodation
Description	R-Value	Compressive Strength	Water Vapor Barrier	Inches	Inches	Inches	Inches
102015	10oF.ft2 .h/Btu	28.0 psi	23.8 (ng/Pa.s.m2) 0.42 Perms	49.25" x 25.25"	48" x 24"	3 3/8"	3/8", 1/2", 5/8", 3/4", 1"

WSD Supports / Fasteners



Conduit Elbows

Description	Part Number	Qty./Box	List Price
3/8" & 1/2" Conduit Elbows	WSD34CE	60	$4.96
5/8" & 3/4" Conduit Elbows	WSD56CE	40	$5.87

High impact strength moulded plastic 90 degree long radius elbow, designed to direct and protect heating pipes in transition areas where pipe enters and exits concrete slab.



Pipe Tracking

Description	Part Number	Qty./Box	List Price
3/8", 1/2", 5/8", 3/4" x 39.5" Pipe Tracking	WSD3456PIPETRACK	1	$5.73
Staples for WSD3456PIPETRACK Tracking	WSD3456PIPE-TRACKSTPL	500	$88.49

Pipe tracking provides even pipe spacing and exact regulation of pipe heights and can be fastened to many surfaces; concrete or plywood subfloors, steel Q decking and styrofoam insulation.



Metal Bend Support

Description	Part Number	Qty./Box	List Price
Metal Bend Support for 3/8" Pipe	WSDMBS3	50	$1.86
Metal Bend Support for 1/2" Pipe	WSDMBS4	50	$2.51
Metal Bend Support for 5/8" Pipe	WSDMBS5	50	$3.09
Metal Bend Support for 3/4" Pipe	WSDMBS6	25	$4.66



Tube Talon

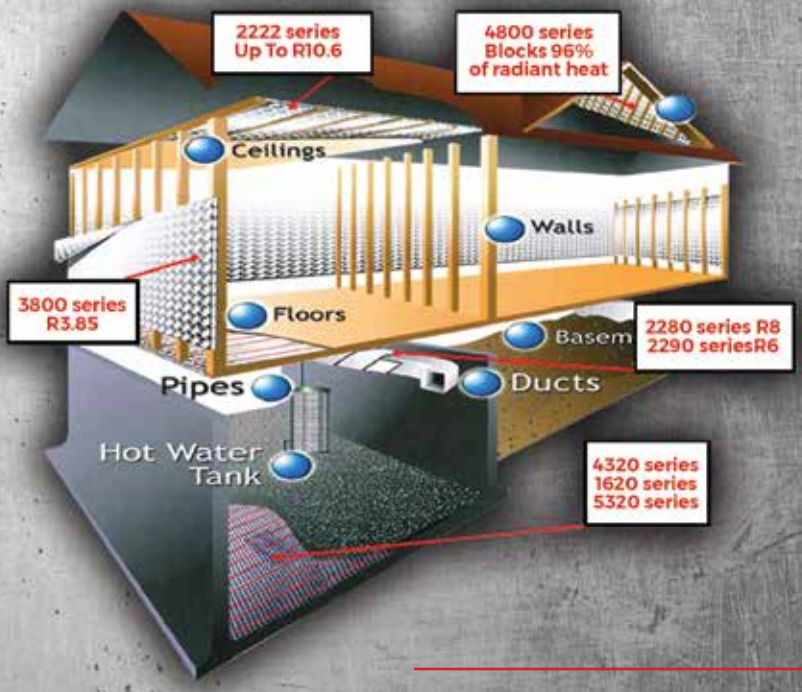
Description	Part Number	Qty./Bag	List Price
1/2" Tube talon W/ Nail	WSD4TTwNAIL	100	$11.66
3/4" Tube talon W/ Nail	WSD6TTwNAIL	100	$12.12

NOTES

www.willowsra.com
WSD
WISCONSIN • U.S.A.

WWW.WILLOWSRA.COM

Covertech rFOIL



- REFLECTIVE INSULATION TAPES
- RADIANT BARRIER
- CUSTOM BUILDS

Covertech Reflective Insulation & Tapes

Concrete Underpad

Part Number	Description	Size	Sq. Ft./ Roll	List Price	Lit Page
5320-48-125	Reflective/Double Bubble/Poly white	48" x 125'	500 sq. ft.	$261.57	204-205
4320-48-125	Reflective/Double Bubble/Poly clear	48" x 125'	500 sq. ft.	$261.57	204-205
4320-72-50	Reflective/Double Bubble/Poly clear	72" x 50'	300 sq. ft.	$157.03	204-205
4320-72-125	Reflective/Double Bubble/Poly clear	72" x 125'	750 sq. ft.	$392.32	204-205
4320-96-125	Reflective/Double Bubble/Poly clear	96" x 125'	1000 sq. ft.	$523.08	204-205
RECOMMENDED TAPE PART# 45313 or 45312					

Ultra CBF

Part Number	Description	Size	Sq. Ft./ Roll	List Price	Lit Page
1620-48-125	Bubble/Reflective/Bubble	48" x 125'	500 sq. ft.	$465.71	192-193
RECOMMENDED TAPE PART# 45313 or 45312					

Reflective Duct Wrap Insulation for R4.2-R6

Part Number	Description	Size	Sq. Ft./ Roll	List Price	Lit Page
2290-48-100	Reflective/Double Bubble/Reflective	48" x 100'	400 sq. ft.	$225.29	194-195
2290-48-125	Reflective/Double Bubble/Reflective	48" x 125'	500 sq. ft.	$281.54	194-195
RECOMMENDED TAPE PART# 15113					

Reflective Duct Wrap Insulation for R8

Part Number	Description	Size	Sq. Ft./ Roll	List Price	Lit Page
2280-48-050	BIG 8 Multi-Layer Duct Wrap Indoor	48" x 50'	200 sq. ft.	$208.34	192-193
Indoor RECOMMENDED TAPE PART# 15113					
2299-02-050	Duct Spacer Strips for R6 and R8	2" x 50'	8.33 sq. ft.	$9.09	192-193







Covertech Reflective Insulation & Tapes

Between Joist Insulation

Part Number	Description	Size	Sq. Ft./ Roll	List Price	Lit Page
2222-16-125	Reflective/Double Bubble/Reflective	16" x 125'	167 sq. ft.	$99.24	198
2222-18-125	Reflective/Double Bubble/Reflective	18" x 125'	187.5 sq. ft.	$111.62	198
2222-24-125	Reflective/Double Bubble/Reflective	24" x 125'	250 sq. ft.	$148.84	198

RECOMMENDED TAPE PART# 15113

All Between Joist Insulation Products are in Tab 2 format (5/8" – 3/4" tab on both sides)

NT Radiant Barrier Foils

Part Number	Description	Size	Sq. Ft./ Roll	List Price	Lit Page
1800-48-125S	Ultra NT/SCIF	48" x 125'	500 sq. ft.	$275.49	208-209
4800-48-125P	NT barrier foil perforated	48"x125'	500 sq. ft.	$180.87	206-207

RECOMMENDED TAPE PART# 15513 or 15512

Adhesive Foil Tapes

Part Number	Description	Size	Sq. Ft./ Roll	List Price	Lit Page
15512	Aluminum Tape w/ Kraft Liner	2" x 150'	24	$20.61	212-213
15513	Aluminum Tape w/Kraft Liner	3" x 150'	16	$30.93	212-213
15113	Premium Metalized High Tack Linerless Foil Tape	3" x 150'	16	$23.98	212-213
45312	White Poly Tape	2" x 150'	24	$17.17	212-213
45313	White Poly Tape	3" x 150'	16	$23.18	212-213
11701	Conductive Adhesive Tape	1"x54'	9	$138.67	212-213
11702	Conductive Adhesive Tape	2"x54'	5	$275.45	212-213











rFOIL® Reflective Insulation

BIG 8 DUCT INSULATION R-8.0 Thermal Value

(2280 Series)

R-8.0 Reflective bubble duct insulation is now ICC-ES listed ESL-1044 and Evaluation Report ESR-1236

rFOIL® Benefits:

- R-Value = 8.0... Improves HVAC System Efficiency
- No Foam Corner Spacers Needed
- The First R-8.0 without a Mineral Fiber / Fiber Glass Core... NO ITCH!
- Thermal Value Unaffected by Moisture or Humidity
- Will NOT harbor Mold, Mildew or other Fungi
- Prevents Exterior Build-Up of Condensation
- Saves Energy, Money and it's Easy to Install



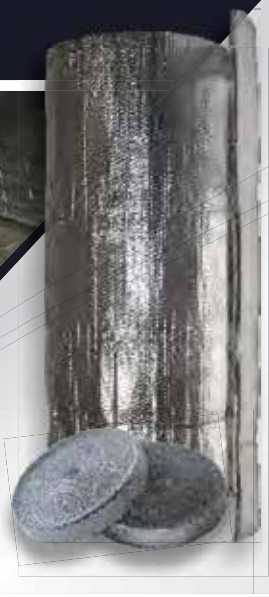
See ESR -1236 for thermal resistance (R-value) of the assembly or assemblies

rFOIL® Applications:

- Duct Wrap Insulation
- Suitable for all duct types
- Residential and Commercial
- Indoor Use
- R-8 Code Requirements







rFOIL® BIG-8 is specially designed to reduce radiant heat gain/loss in all residential and commercial duct applications. rFOIL® also helps control condensation by providing an airtight thermal break around duct work.

rFOIL® BIG-8 Reflective Duct Insulation increases system efficiency, lowers stress on HVAC equipment, reduces energy usage and utility bills. The first R-8 reflective bubble insulation is now here!

WWW.WILLOWSRA.COM

rFOIL® Reflective Insulation

BIG 8 R-8.0 DUCT INSULATION (2280 Series)

Aluminized Radiant Barrier Outer Surface	Heavy-Duty Bubble Thermal Core	Non-Fibrous Materials	Low-Profile Insulation	Meets R-8 and/or R-6 Code Requirements	Full-Length, Printed Code Certification Strip
- Provides unmatched - Thermal performance - Stops virtually all heat from radiating into or out of duct systems - Greatly improves hvac system efficiency - Lowers run-time and increases lifespan of HVAC equipment - Reduces energy usage and utility bills … saves $$$	- Air spaces provide tremendous condensation control - Airtight and impermeable to moisture - Provides a consistent thermal block around ductwork - Superior tear strength and puncture resistance - High compression resistance maintains thermal value - Seals duct system from attic dust and fibrous glass particles	- Clean, Safe and Easy to Install - No Protective Equipment or Clothing Required - No ITCH or Exposure to Glass Fibers - Will Not Harbor Mold, Mildew or other Fungi - Will not Rot, Degrade, Compress or Break Down over Time Thermal Value - Unaffected by Humidity (unlike Fibrous Products) - Seals Duct System from Attic Dust and Fibrous Glass Particles - Improves Indoor Air Quality (when Properly Sealed)	- High Thermal Value with Less Product Thickness - Easy to Handle and Quick to Install - Flexible and Lightweight - Simple to Cut and Configure around Obstructions	- First Reflective Bubble (non-fibrous) Insulation to Achieve R-8 (with Air Space) or R-6 (without Air Space) - Does NOT require costly foam corner spaceres	- Allows inspectors to easily identify product and specs - Printed with R-values and ASTM fire ratings - Greater inspector acceptance and approval

PRODUCT SIZE



PRODUCT SPECIFICATIONS

Physical Properties	Test	BIG-8 (Indoor Use Only) 2280 Series (Metalized Foil)
THERMAL RESISTANCE	ASTM C335	R-8.0 with Bubble Spacers (INCLUDED)
TEMPERATURE RANGE	ASTM C411	-50°F to 180°F
FIRE RATING	ASTM E84-09	CLASS 1 / CLASS A
	CAN/ULC-S102-10	FLAME SPREAD = 0 SMOKE DEVELOPED = 0
EMISSIVITY	ASTM C1371	0.04
REFLECTIVITY	ASTM E903	0.96
WATER VAPOR PERMEABILITY	ASTM E96	0.029 Perms
RESISTANCE TO FUNGI & BACTERIA	ASTM C1338-08	DOES NOT PROMOTE GROWTH
BLEEDING and DELAMINATION	ASTM C1224-03	NO BLEEDING or DELAMINATION
PLIABILITY	ASTM C1224-03	NO CRACKING
TEMPERATURE and HUMIDITY RESISTANCE	ASTM C1258	Evidence of Delamination - NONE Evidence of Corrosion - NONE Loss of Metallaization - MINIMAL
FIRE RATING - FULL ROOM BURN TEST	NFPA 286	PASSES

Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

12/17

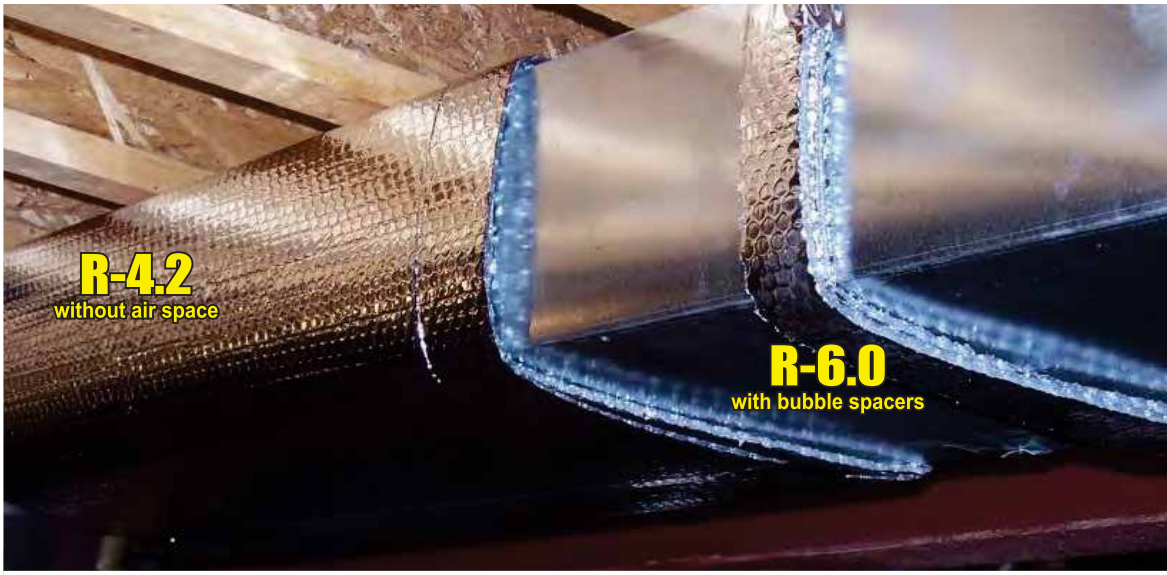
Verified by RIMA International REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION US-006-10

COVERTECH FLEXIBLE PACKAGING A Division of Covertech Fabricating Inc.

PATENTED (See website for details) www.rFOIL.com

rFOIL®
Reflective Insulation

DUCT INSULATION
R-4.2 and R-6.0
(2290 Series)



rFOIL® Benefits:

- Meets R-4.2 and/or R-6 Insulation Code Requirements
- Achieve R-Values with Less Material Thickness
- Will Not Harbor Mold, Mildew or other Fungi
- Greatly Improves HVAC System Efficiency
- Reduces Energy Usage and Utility Bills
- Lowers Run-Time and Increases Lifespan of Heating and Cooling Systems
- Impermeable Thermal Core Provides Tremendous Condensation Control
- Easy, Clean, and Safe to Install
- Printed with Full-Length Code Certification Strip

rFOIL® Applications:

- Duct Wrap Insulation
- Suitable for all metal ductwork
- Residential and Commercial
- Indoor Insulation Use ***(2290 Series)***



rFOIL® Reflective Duct Insulation is a double-layer of polyethylene bubble, bonded to and sandwiched between two radiant barrier sheets.

rFOIL® is specially designed to reduce radiant heat gain/loss in all residential and commercial duct applications. **rFOIL®** also helps control condensation by providing an airtight thermal break around duct work.

rFOIL® Reflective Duct Insulation increases system efficiency, lowers stress on HVAC equipment, reduces energy usage and utility bills.

rFOIL® Reflective Insulation

DUCT INSULATION
R-4.2 and R-6.0
(2290 Series)

Aluminized Radiant Barrier Outer Surface
- Provides unmatched thermal performance
- Stops virtually all heat from radiating into or out of duct systems
- Greatly improves hvac system efficiency
- Lowers run-time and increases lifespan of HVAC equipment
- Reduces energy usage and utility bills … saves $$$

Heavy-Duty Double Bubble Thermal Core
- Air spaces provide tremendous condensation control
- Airtight and impermeable to moisture
- Provides a consistent thermal block around ductwork
- Superior tear strength and puncture resistance
- High compression resistance maintains thermal value
- Seals duct system from attic dust and fibrous glass particles

Non-Fibrous Materials
- Clean, safe easy to install
- No protective equipment or clothing required
- No ITCH or exposure to glass fibers
- Will not harbor mold, mildew or other fungi
- Will not rot, degrade, compress or break down over time
- Thermal Value unaffected by humidity (unlike fibrous products)
- Seals duct system from attic dust and fibrous glass particles

Low-Profile Insulation
- High thermal Value with less product thickness
- Easy to handle and quick to install
- Flexible and lightweight
- Simple to cut and configure around obstructions

Full-Length, Printed Code Certification Strip
- Allows inspectors to easily identify product and specs
- Printed with R-values and ASTM fire ratings
- Greater inspector acceptance and approval

PRODUCT SIZES

36" X 50'	48" X 50'
48" X 100'	48" X 125'



PRODUCT SPECIFICATIONS

Physical Properties	Test	Duct Insulation (Indoor Use Only) 2290 Series (Metalized Foil)
NOMINAL THICKNESS	—	5/16"
WEIGHT	—	1.25 oz / sq. ft.
TEMPERATURE RANGE	ASTM C411	-50°F to 180°F
FIRE RATING	ASTM E84-09	CLASS 1 / CLASS A
	CAN/ULC-S102-10	FLAME SPREAD = 0 SMOKE DEVELOPED = 0
THERMAL RESISTANCE	ASTM C335	R-4.2 (without spacers)
		R-6.0 (with bubble spacers)
EMISSIVITY	ASTM C1371	0.04
REFLECTIVITY	ASTM E903	0.96
WATER VAPOR PERMEABILITY	ASTM E96	<0.02 Perms
RESISTANCE TO FUNGI & BACTERIA	ASTM C1338	DOES NOT PROMOTE GROWTH
FIRE RATING - FULL ROOM BURN TEST	NFPA 286	PASSES

Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

Verified by RIMA International™ Reflective Insulation Manufacturers Association US-006-10

COVERTECH FLEXIBLE PACKAGING A Division of Covertech Fabricating Inc.

PATENTED (See website for details) www.rFOIL.com

rFOIL®
Reflective Insulation

REFLECTIVE INSULATION
(2200 Series)







rFOIL® Benefits:

- Staple Tabs for Between Joists
- Minimal Product Thickness
- Vapor Barrier Protection
- Increases Insulating Value of Wall Systems
- Achieve R-Values with Less Material Thickness
- Will Not Harbor Mold, Mildew or other Fungi
- Reduces Energy Usage and Utility Bills
- Impermeable Thermal Core Provides Tremendous Condensation Control
- Easy, Clean, and Safe to Install

rFOIL® Applications:

- Commercial buildings
- Residential buildings
- Manufactured homes
- Mobile homes
- Cottages
- Basements
- Metal Roofs
- DIY applications and much more...



rFOIL® reflective Insulation is a single or double layer of polyethylene bubbles bonded to and sandwiched between two radiant barrier metalized sheet.

Its unique construction is specially designed to reduce radiant heat gain or loss in Residential, Commercial and HVAC applications while increasing comfort.

rFOIL® Reflective Insulation

REFLECTIVE INSULATION

(2200 Series)

Square edge configuration for normal edges

- Square edge metalized rFOIL® is a multi purpose insulation
- Easily cut and configured around obstacles
- Tape seals can be made at any angle

1" tabs running the length of the rFOIL®

- Staple tabs can be stapled between joists
- Allows for quick and easy installation
- Helps create the air space necessary

Tabs equipped with tape running the length of the rFOIL®

- Quick seam tabs can be used in place of rFOIL® tape
- Seals the seams with ease
- Seals the metalized rFOIL™ in order to avoid breaks in the insulation

PRODUCT SIZES

- Width: 12", 16", 18", 24", 48", 72" and 96"
- Length: 50', 75', 100', 102' and 125'

PRODUCT OPTIONS

- Single or Double Bubble
- Square Edge, Tab 1 Side, Tab 2 Sides, Quick Seam Adhesive Strip

PRODUCT SPECIFICATIONS



Physical Properties	Test	Double Layer	Single Layer
NOMINAL THICKNESS	—	5/16"	3/16"
FIRE RATING	ASTM E84-09	CLASS 1 / CLASS A	
EMISSIVITY	ASTM C1371-04A	0.04	0.04
REFLECTIVITY	ASTM E903	0.96	0.96
WATER VAPOR PERMEABILITY	ASTM E96	0.02 Perms	0.04 Perms
RESISTANCE TO FUNGI & BACTERIA	ASTM C1149	DOES NOT PROMOTE GROWTH	
PLIABILITY	ASTM C1224-03	NO CRACKING	
BLEEDING AND DELAMINATION	ASTM C1224-03	NO BLEEDING OR DELAMINATION	
CORROSIVENESS	ASTM D3310-00	PASSES	
FIRE RATING - FULL ROOM BURN TEST	NFPA 286	PASSES	






Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

PATENTED
(See website for details)
www.rFOIL.com

Verified by RMA International
REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION
US-006-10

COVERTECH FLEXIBLE PACKAGING
A Division of Covertech Fabricating Inc.

ICC ES
ICC EVALUATION SERVICE
ESR-1236

ICC ES
ICC-ES Approved
ESL-1044

rFOIL™ Reflective Insulation

INSTALLATION SHEET

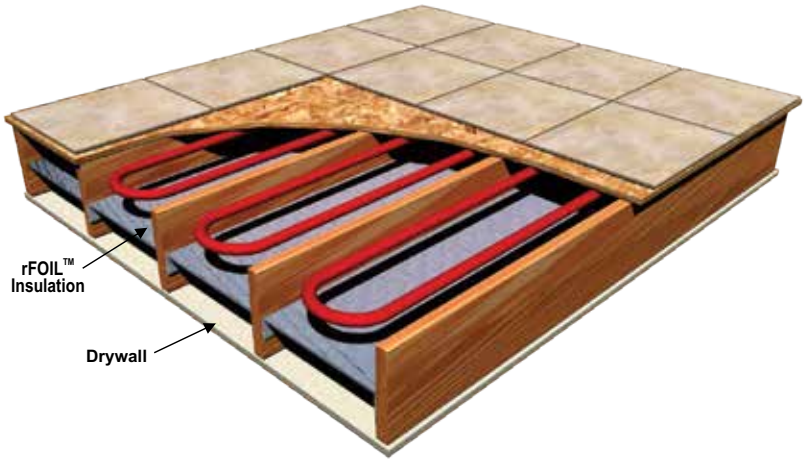
RADIANT HEATING BETWEEN JOISTS: R-13

(In-Between Floor Joists with Drywall Installed to the Underside)

- EFFECTIVELY DIRECTS HEAT BACK INTO THE LIVING SPACE
- QUICK AND EASY TO INSTALL, AND ADDS R-VALUE
- INCREASES EFFICIENCY OF RADIANT HEATING SYSTEMS
- CAN BLOCK UP TO 96% OF RADIANT HEAT

INSTALLATION METHOD

1. Using 16" wide reflective insulation with staple tabs, insert the material between joists, 2"-4" below heating coils.
2. Using regular staples, affix the insulation by stapling the tabs into the sides of the joists.
3. Using rFOIL™ reflective tape, seal all seams created by the wood butting up against the insulation.
4. Install drywall to the underside of the joists, creating two reflective air spaces.



SUGGESTED PRODUCTS FOR THIS APPLICATION:	
rFOIL™ INSULATION PRODUCT	2220 and/or 2222 Series (Available in Various Dimensions)
rFOIL™ TAPE	15013 or 15012 (Reflective)

a) Check local building codes for compliance before installation. This installation sheet is intended solely to illustrate the proper location and placement of rFOIL™ Reflective Insulation products in specific constructions applications. They are not intended to illustrate proper construction methods (which is ultimately the responsibility of the builder or contractor). The installation instructions are only recommendations relating to the location and placement of rFOIL™ Reflective Insulation products and rFOIL™ makes no claims that these construction systems are universally accurate.

b) All warranties are void if rFOIL™ Reflective Insulation products are used in exterior applications, or in non-enclosed systems or buildings.

c) Exercise caution when using rFOIL™ Reflective Insulation products near and around electrical wiring and devices.

COVERTECH FABRICATING INC

WWW.WILLOWSRA.COM WSD WISCONSIN U.S.A.

rFOIL™ Reflective Insulation

INSTALLATION SHEET

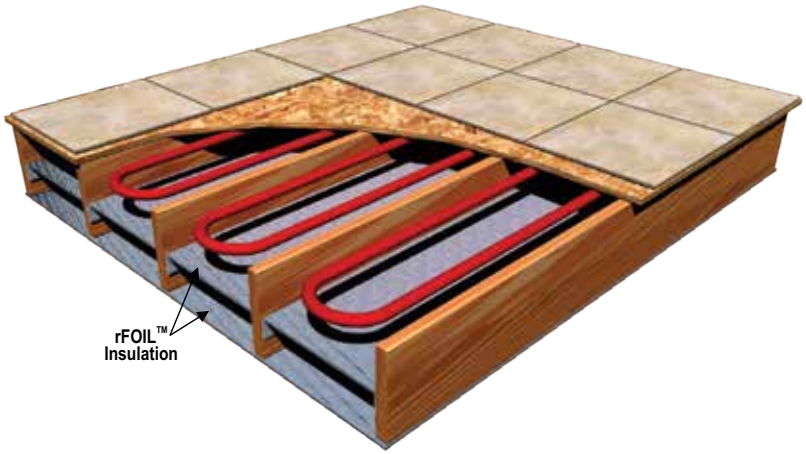
RADIANT HEATING UNDER JOISTS: R-21

(Both Under and In-Between Floor Joists)

- EFFECTIVELY DIRECTS HEAT BACK INTO THE LIVING SPACE
- QUICK AND EASY TO INSTALL, AND ADDS R-VALUE
- INCREASES EFFICIENCY OF RADIANT HEATING SYSTEMS
- CAN BLOCK UP TO 96% OF RADIANT HEAT

INSTALLATION METHOD

1. Using 16" wide reflective insulation with staple tabs, insert the material between joists, 2"-4" below heating coils.
2. Using regular staples, affix the insulation by stapling the tabs into the sides of the joists.
3. Using rFOIL™ reflective tape, seal all seams created by the wood butting up against the insulation.
4. Unroll and staple 48" wide reflective insulation to the bottom of floor joists.
5. Tape all joints and seal around the perimeter with rFOIL™ reflective tape.



SUGGESTED PRODUCTS FOR THIS APPLICATION:	
rFOIL™ INSULATION PRODUCT	2220 and/or 2222 Series (Available in Various Dimensions)
rFOIL™ TAPE	15013 or 15012 (Reflective)

a) Check local building codes for compliance before installation. This installation sheet is intended solely to illustrate the proper location and placement of rFOIL™ Reflective Insulation products in specific constructions applications. They are not intended to illustrate proper construction methods (which is ultimately the responsibility of the builder or contractor). The installation instructions are only recommendations relating to the location and placement of rFOIL™ Reflective Insulation products and rFOIL™ makes no claims that these construction systems are universally accurate.

b) All warranties are void if rFOIL™ Reflective Insulation products are used in exterior applications, or in non-enclosed systems or buildings.

c) Exercise caution when using rFOIL™ Reflective Insulation products near and around electrical wiring and devices.

COVERTECH FABRICATING INC

rFOIL™ Reflective Insulation

INSTALLATION SHEET

WALL: R-14.4 for 2"x4" or R-21 for 2"x6" Framing

(In-Between Joist Over Existing Insulation in a 2"x4" or 2"x6" Stud Wall)

- HELPS TO REDUCE BASEMENT DAMPNESS, AND INCREASES COMFORT
- REDUCES HEAT LOSS TO THE SURROUNDING ENVIRONMENT
- EXCELLENT VAPOR AND RADON BARRIER
- UNAFFECTED BY MOISTURE AND HUMIDITY
- QUICK AND EASY TO INSTALL - ADDS R-VALUE

INSTALLATION METHOD

1. Install R-13 batt insulation (for 2"x4" framing) or R-19 Batt insulation (for 2"x6" framing un-faced (as per manufacturer's specifications).
2. Place the first corner edge of the rFOIL™ insulation in an upper corner of the stud cavity. Staple the product to the side of the stud (creating a 3/4" tab on the product and compressing it into the fiberglass). The edge of the product should be flush with the forward corner of the stud.
2. Staple the rFOIL™ insulation along the staple tabs and affix to the studs. Repeat on opposite stud.
3. Seal all edges with rFOIL™ tape to ensure a continuous insulation and vapor barrier.
4. Install drywall as per the usual method. The recessed insulation material will create the necessary airspace require for reflective insulation.



SUGGESTED PRODUCTS FOR THIS APPLICATION:	
rFOIL™ INSULATION PRODUCT	2222 Series (Available in Various Dimensions)
rFOIL™ TAPE	15013 or 15012 (Reflective)

a) Check local building codes for compliance before installation. This installation sheet is intended solely to illustrate the proper location and placement of rFOIL™ Reflective Insulation products in specific constructions applications. They are not intended to illustrate proper construction methods (which is ultimately the responsibility of the builder or contractor). The installation instructions are only recommendations relating to the location and placement of rFOIL™ Reflective Insulation products and rFOIL™ makes no claims that these construction systems are universally accurate.

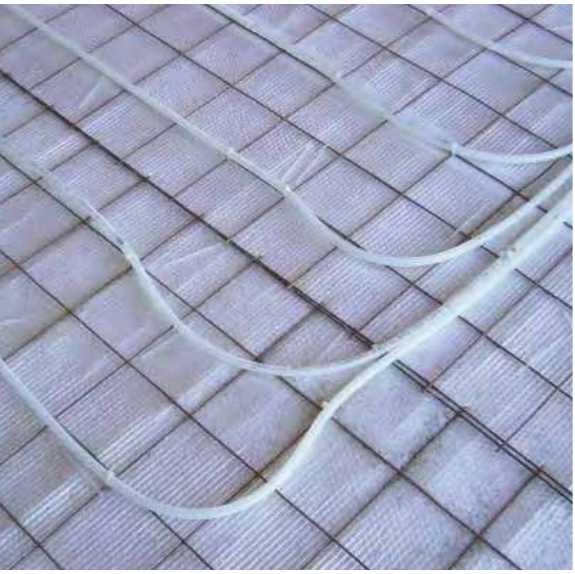
b) All warranties are void if rFOIL™ Reflective Insulation products are used in exterior applications, or in non-enclosed systems or buildings.

c) Exercise caution when using rFOIL™ Reflective Insulation products near and around electrical wiring and devices.

COVERTECH FABRICATING INC

rFOIL®
Reflective Insulation

ULTRA CBF
Concrete Barrier Foil
(1620 Series)





rFOIL® Benefits:

- Reduces Radiant Heat Loss Making Floors Warmer and more Comfortable
- Multi-Layer Vapor and Radon Barrier (14.2 mil)
- Cost-Effective Alternative to Rigid Foam Insulation
- Improves Efficiency of In-Floor Radiant Heating Systems
- Saves Energy Usage and Utility Costs
- Easy to Form around Obstructions and Conforms Easily to Uneven Grades
- Installs Easily Over any Grade
- Withstands Job Site Traffic

rFOIL® Applications:

- Insulating Under Concrete Slabs
- In-Floor Radiant Heating
- Beneath Concrete Over-Pours
- Edge-Slabs and Expansion Joints
- Outside Foundation Walls
- Snow Melt Systems
- Under Carpet



Ultra CBF is an outstanding reflective insulation and puncture-resistant vapor barrier. Ultra CBF is composed of a single layer reflective sheet, laminated between two layers of ultra-strong polyethylene bubble (up to 140 psi).

Ultra CBF is the ultimate under-slab insulation. It provides exceptional thermal value and a strong, permanent vapor and radon barrier. Ultra CBF typically costs less than 2" rigid PE board insulation. Ultra CBF is easier to handle, cut, and install than rigid foam insulation, yet has nearly six times the compression strength.

rFOIL® Reflective Insulation

ULTRA CBF
Concrete Barrier Foil
(1620 Series)

Reflective Sheet Inner Layer

- Reduces Radiant Heat Loss
- Redirects Radiant Heat Energy Back to Living Area
- Saves Energy Usage and Lowers Heating Costs
- Extends Life of Heating System
- Faster Reaction Time for Radiant Floor Heating

Multi-Layer Vapor and Radon Barrier (14.2 mil)

- Provides Continuous Thermal Break below the Slab
- Keeps underground moisture away from slab
- Durable and Long-Lasting Polyethylene
- Superior Puncture Resistance and Tear Strength
- Outstanding Vapor and Radon Barrier
- Can also Insulate the Edge-Slab and Outside of Foundation

Lightweight, Flexible Materials

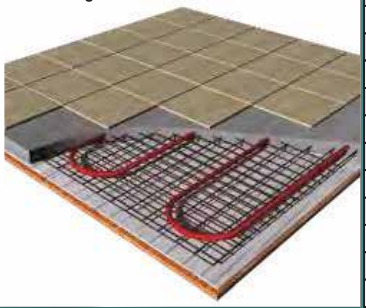
- Just Unroll, Overlap, and Tape the Seams
- Easy to Cut and Configure around Obstructions
- Ideal for Edge-Slab Insulation and Expansion Joint (Easily Folds Upward at Perimeter Footing)

MORE BENEFITS

- Strongly Bonded to Resist Delamination
- Will not deteriorate over time
- Sealed Seams Provide a Consistent Insulation
- Aluminum Radiant Barrier Permanently Protected from Corrosive Ground Elements, such as Lime and Soil Alkaline

PRODUCT SIZES

- Configurations: Square Edge
- Width: 16" and 48"
- Length: 125'



PRODUCT SPECIFICATIONS

Physical Properties	Test	Value
NOMINAL THICKNESS	—	5/16"
WEIGHT	—	1.16 oz / sq. ft.
TEMPERATURE RANGE	ASTM C411	-50°F to 180°F
EMISSIVITY	ASTM C1371-04A	43%
REFLECTIVITY	ASTM E903	57%
COMPRESSION STRENGTH	ASTM D751	140 psi
TENSILE STRENGTH	CAN/CGSB - 51.33-M89	21.13 lbs/sq. in.
DEFLECTION	ASTM 1621	<10% under 0.5 PSI
PUNCTURE RESISTANCE	—	85 lbs/sq. in.
WATER VAPOR PERMEABILITY	ASTM E96, ONGC 51.33-M89	<0.01 Perms
RESISTANCE TO FUNGI & BACTERIA	ASTM C1338	DOES NOT PROMOTE GROWTH
LINEAR SHRINKAGE	—	NONE
FLEXIBILITY	CAN/CGSB - 51.33-M89	NO CRACKING

Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

Verified by RIMA International REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION US-006-10

COVERTECH FLEXIBLE PACKAGING A Division of Covertech Fabricating Inc.

PATENTED (See website for details) www.rFOIL.com

WWW.WILLOWSRA.COM

rFOIL™ Reflective Insulation

INSTALLATION SHEET

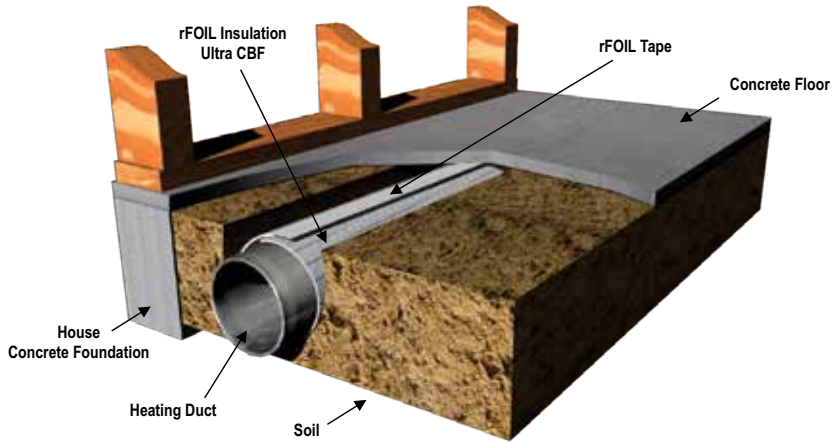
DUCT WRAP UNDER CONCRETE

(Draped Method)

- UNAFFECTED BY MOISTURE AND HUMIDITY
- QUICK AND EASY TO INSTALL, AND ADDS R-VALUE
- REDUCES HEAT LOSS, AND HEAT GAIN ALL YEAR ROUND
- CAN BLOCK SIGNIFICANT AMOUNTS OF RADIANT HEAT TRANSFER

INSTALLATION METHOD

1. Unroll rFOIL™ Ultra CBF and position it at the bottom of the duct cavity or trench.
2. Lay duct work directly on to insulation material.
3. Wrap insulation around the duct until it is fully enclosed. Seal the joint with 3" rFOIL™ white poly tape.
4. Fill the duct trench with soil, or install floor decking as usual.



SUGGESTED PRODUCTS FOR THIS APPLICATION:	
rFOIL™ INSULATION PRODUCT	1620 Series (Available in Various Dimensions)
rFOIL™ TAPE	15853 or 15582 (White Poly)

a) Check local building codes for compliance before installation. This installation sheet is intended solely to illustrate the proper location and placement of rFOIL™ Reflective Insulation products in specific constructions applications. They are not intended to illustrate proper construction methods (which is ultimately the responsibility of the builder or contractor). The installation instructions are only recommendations relating to the location and placement of rFOIL™ Reflective Insulation products and rFOIL™ makes no claims that these construction systems are universally accurate.

b) All warranties are void if rFOIL™ Reflective Insulation products are used in exterior applications, or in non-enclosed systems or buildings.

c) Exercise caution when using rFOIL™ Reflective Insulation products near and around electrical wiring and devices.

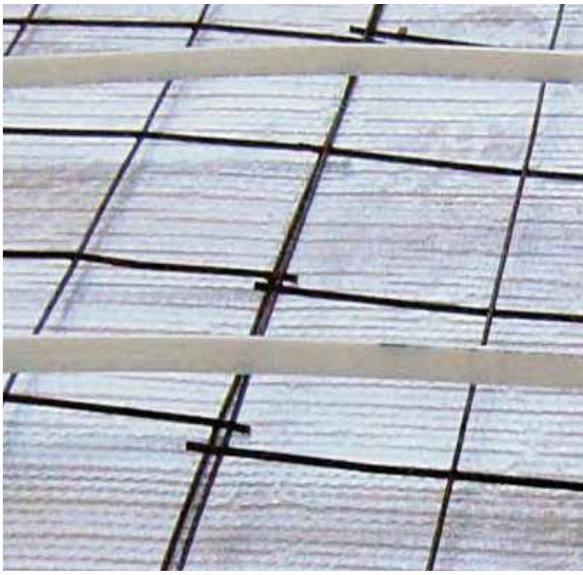
COVERTECH FABRICATING INC

rFOIL® Reflective Insulation

CONCRETE UNDERPAD

(4320 Series)





rFOIL® Benefits:

- Reduces Radiant Heat Loss through Floors
- High-Strength, Multi-Layer Vapor and Radon Barrier
- Cost-Effective Alternative to Rigid Foam Insulation
- Improves Efficiency of In-Floor Radiant Heating Systems
- Reduces Slab Reaction Time at System Startup
- Saves Energy Usage and Utility Costs
- Easy to Form around Obstructions
- Installs Easily Over any Grade
- Withstands Job Site Traffic

rFOIL® Applications:

- Insulating Under Concrete Slabs
- Beneath Concrete Over-Pours
- Edge-Slabs and Expansion Joints



rFOIL® Standard Concrete Underpad are an outstanding reflective insulation and puncture-resistant vapor barrier. They are composed of a double layer of high-strength polyethylene bubbles sandwiched between one layer of metalized foil, and a layer of clear polyethylene.

rFOIL® Standard Concrete Underpad provides exceptional thermal value and a strong, permanent vapor and radon barrier. They are cost-effective alternative to rigid foam insulation, and are always installed with the clear side facing upwards.

rFOIL® Reflective Insulation

CONCRETE UNDERPAD

(4320 Series)

Reflective Metalized Foil Facing (installed facing down)

- Reduces Radiant Heat Loss
- Redirects Radiant Heat Energy Back to Living Area
- Saves Energy Usage and Lowers Heating Costs
- Extends Life of Heating System
- Faster Reaction Time for Radiant Floor Heating

Clear Polyethylene Facing

- Unaffected by Lime and other Corrosive Chemicals, often Found in Concrete.

Multi-Layer Bubble Core (8.4 mil)

- Provides Continuous Thermal Break below the Slab
- Keeps underground moisture away from slab
- Durable and Long-Lasting Polyethylene
- Strong Puncture Resistance and Tear Strength
- Outstanding Vapor and Radon Barrier
- Can also Insulate the Edge-Slab and Outside of Foundation

Lightweight, Flexible Materials

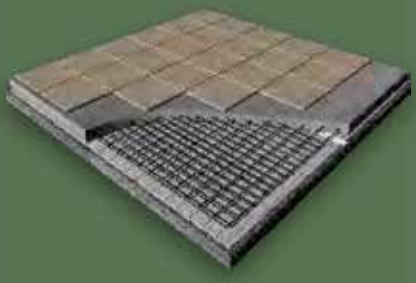
- Just Unroll, Overlap, and Tape the Seams
- Easy to Cut and Configure around Obstructions
- Ideal for Edge-Slab Insulation and Expansion Joint (Easily Folds Upward at Perimeter Footing)

MORE BENEFITS

- **Warmer, More Comfortable Floors**
- **Conforms Easily to Uneven Grades**
- **Strongly Bonded to Resist Delamination**
- **Sealed Seams Provide a Consistent Insulation**

PRODUCT SIZES

- Configurations: Square Edge
- Width: 48” - Length: 125’



PRODUCT SPECIFICATIONS

Physical Properties	Test	Value
NOMINAL GAUGE	ASTM D751	8.4 mil
FIRE RATING	ASTM E84-09	CLASS 1 / CLASS A
EMISSIVITY	ASTM C1371-04A	0.04
REFLECTIVITY	ASTM E903	0.96
WATER VAPOR PERMEABILITY	ASTM E96	0.42 Perms
RESISTANCE TO FUNGI & BACTERIA	ASTM C1149	DOES NOT PROMOTE GROWTH
PLIABILITY	ASTM C1224-03	NO CRACKING
BLEEDING AND DELAMINATION	ASTM C1224-03	NO BLEEDING OR DELAMINATION
CORROSIVENESS	ASTM D3310-00	PASSES
COMPRESSION	CAN/CGSB 4.2	70 PSI
FIRE RATING - FULL ROOM BURN	NFPA 286	PASSES

Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

Verified by RIMA International REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION US-006-10

COVERTECH FLEXIBLE PACKAGING A Division of Covertech Fabricating Inc.

PATENTED (See website for details) www.rFOIL.com

rFOIL® Reflective Insulation

NT RADIANT BARRIER

(4800 Series)





rFOIL® Benefits:

- Blocks 96% of Radiant Heat Transfer
- Lowers Summer Attic Temperatures
- Helps Attics Retain Heat in Winter
- Class 1 / Class A Fire Rating
- Easy to Unroll, Cut and Install
- Safe, Clean, Non-Toxic, No Itch
- Enhances Performance of Installed Fiber Insulation
- Perforated for Breath ability
- Reduces Heating and Cooling Costs
- Lowers Energy Usage and Utility Bills

rFOIL® Applications:

- Attics
  Warm Climates: Near Roof
  Cold Climates: Atop mass floor insulation
- Over drop-ceiling tiles
- Roof Decking Attachment (facing attic)

FOR MORE INFORMATION



rFOIL® NT (No-Tear) Radiant Barrier are available in a solid or perforated sheet composed of a single layer of woven polyethylene, bonded to and sandwiched between two highly reflective radiant barrier sheets.

rFOIL® NT (No-Tear) Radiant Barrier will dramatically reduce summer attic temperatures, making it easier and less expensive to cool your home and reduce the workload on heating and cooling equipment.

rFOIL® also helps reduce winter heating costs by helping existing fiber insulation hold heat and lower energy usage.

NT RADIANT BARRIER

(4800 Series)

rFOIL® Reflective Insulation

Inner Layer of Woven Polyethylene

- Outstanding tear strength and puncture resistance
- Allows for a permanent bond of foil layers
- Allows firm hold when stapled

Reflective Radiant Barrier Facings

- Reduces radiant heat gain and loss
- Redirects radiant heat energy back to living area
- Saves energy usage and lowers heating costs
- Extends life of heating and cooling systems
- Helps lower attic temperatures by up to 40°F
- Improves effectiveness of fiber/mass insulations
- Helps attic floor insulation retain heat

Lightweight, Flexible Materials

- Easy to unroll, cut to fit, and install
- Lightweight - 500 square feet weighs only 15 lbs.
- Easily cut to fit around obstructions

PRODUCT SIZES

48" x 125' and 48" x 250'



PRODUCT SPECIFICATIONS

Physical Properties	Test	4800P Perforated	4800S Solid
FIRE RATING	ASTM E84-09	CLASS 1 / CLASS A	
EMISSIVITY	ASTM C1371-04A	0.04	0.04
REFLECTIVITY		0.96	0.96
WATER VAPOR TRANSMISSION	ASTM E96-05	8.53 Perms	0.027 Perms
CORROSIVENESS	ASTM D3310-00	PASSES	PASSES
BLEEDING and DELAMINATION	ASTM C1313-05	NO BLEEDING or DELAMINATION	
PLIABILITY	ASTM C1313-05	NO CRACKING	
GROWTH OF FUNGI	ASTM C1338-08	DOES NOT PROMOTE GROWTH	
TENSILE STRENGTH	ASTM D2261	LENGTH: 27.34 lbs	
		WIDTH: 16.31 lbs	

TESTING

The photo to the right shows the RIGHT side of the hot box which is insulated with fiberglass is at a much higher temperature then the LEFT box which is insulated with the rFOIL Radiant Barrier.

The rFOIL® Radiant Barrier is reflecting a tremendous amount of the radiant heat. The RIGHT side (which is not insulated with a layer of rFOIL®) shows 62 degrees hotter difference therefore illustrating how much heat it keeps out in the summer. In the winter it would be doing the same but only in reverse reflecting the heat back into the home. Having 2 layers help all 3 forms of heat gain/heat loss, conduction, convection and radiant heat.



Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

Verified by RIMA International REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION US-006-20

COVERTECH FLEXIBLE PACKAGING A Division of Covertech Fabricating Inc.

PATENTED (See website for details) www.rFOIL.com

rFOIL®
Reflective Insulation

ULTRA NT RADIANT BARRIER for SCIF'S

(1800 Series)





rFOIL® Benefits:

- Minimum Shielding Effectiveness **(100MHz – 10GHz):**
  - 85 dB (Solid) - 67 dB (Perforated)
- **Highly reflective radiant barrier surface**
- **Reflects 97% of Radiant Heat**
- **Thermal performance unaffected by moisture**
- **Unrolls and cuts easily**
- **Durable and flexible woven polyethylene base**
- **Increases sound attenuation for** SCIF's
- Reduces heating and cooling costs
- Lowers energy usage and utility bills

rFOIL® Applications:

- Sensitive Compartmented Information Facilities (SCIF's)
- Secured Government Buildings



rFOIL® Ultra NT Radiant Barrier is a heavy duty radiant barrier sheet made up of a single layer of woven polyethylene material bonded to and sandwiched between two highly reflective aluminum surfaces.

rFOIL® Ultra NT Radiant Barrier is designed to be used in Sensitive Compartmented Information Facilities (SCIF's). In addition to being a highly effective radiant barrier, the Ultra NT (Solid) is also an approved vapor barrier.

rFOIL® Ultra NT Radiant Barrier also helps reduce winter heating costs by helping existing fiber insulation hold heat and lower energy usage.

rFOIL® Reflective Insulation

ULTRANT RADIANT BARRIER for SCIF's

(1800 Series)

Inner Layer of Woven Polyethylene

- Outstanding tear strength and puncture resistance
- Allows for a permanent bond of foil layers
- Allows firm hold when stapled

Reflective Radiant Barrier Facings

- Reduces radiant heat gain and loss
- Redirects radiant heat energy back to living area
- Saves energy usage and lowers heating costs
- Extends life of heating and cooling systems
- Increases sound attenuation for SCIF's
- Improves effectiveness of fiber / mass insulations

Lightweight, Flexible Materials

- Easy to unroll, cut to fit, and install
- Lightweight - 500 square feet weighs only 15 lbs.
- Easily cut to fit around obstructions

PRODUCT SIZE

48" x 125'
(Solid & Perforated Aluminum Surface)



PRODUCT SPECIFICATIONS

Physical Properties	Test	1800 (Solid)	1800 (Perforated)
EMISSIVITY	ASTM C1371-04A	0.03	
REFLECTIVITY	—	0.97	
CORROSIVENESS	ASTM D3310-00	PASSES	
FIRE RATING	ASTM E84-09	CLASS 1 / CLASS A	
BLEEDING & DELAMINATION	ASTM C1313-05	No Bleeding or Delamination	
PLIABILITY	ASTM C1313-05	No Cracking or Delamination	
TEAR RESISTANCE	ASTM D2261	Length 14.93 / Width 15.13	
WATER VAPOR PERMEABILITY	ASTM E96-05	0.01 Perms	2.69 Perms
RESISTANCE TO FUNGI	ASTM C1338-08	PASSES	
SHIELDING EFFECTIVENESS	IEEE-299:1997 (Solid) IEEE-299:2006 (Perf)	85 dB (100MHz - 10GHz)	67 dB

TESTING

The photo to the right shows the RIGHT side of the hot box which is insulated with fiberglass is at a much higher temperature then the LEFT box which is insulated with the rFOIL Radiant Barrier.

The rFOIL® Radiant Barrier is reflecting a tremendous amount of the radiant heat. The RIGHT side (which is not insulated with a layer of rFOIL®) shows 62 degrees hotter difference therefore illustrating how much heat it keeps out in the summer. In the winter it would be doing the same but only in reverse reflecting the heat back into the home. Having 2 layers help all 3 forms of heat gain/heat loss, conduction, convection and radiant heat.



Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

Verified by RMA International REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION US-006-20

COVERTECH FLEXIBLE PACKAGING A Division of Covertech Fabricating Inc.

PATENTED (See website for details) www.rFOIL.com

rFOIL®
Reflective Insulation

METAL & POST FRAME BUILDING INSULATION

(2500 Series)







rFOIL® Benefits:

- Blocks 96% of Radiant Heat Transfer
- Prevents Interior Condensation
- Class 1 / Class A Fire-Rated (ASTM E84-09)
- Puncture and Tear-Resistant
- Unaffected by Humidity
- Will not Promote Mold and Mildew
- Safe, Non-Toxic and Non-Carcinogenic
- Easy to Handle and Install
- Various Tab Options
- UV-Resistant

rFOIL® Applications:

- Pre-Engineered Steel Buildings
- Post Frame / Pole Barns
- Agricultural Buildings
- Residential Metal Roofs
- Mini Storage
- Livestock Confinement



rFOIL® reflective Insulation is a layer of polyethylene bubbles bonded to and sandwiched between a radiant barrier metalized foil and white polyethylene sheet.

rFOIL® is specifically designed to control heat gain or loss, and prevent interior condensation, in all types of metal and metal-clad buildings.

WWW.WILLOWSRA.COM

rFOIL® Reflective Insulation

METAL & POST FRAME BUILDING INSULATION

(2500 Series)

Reflective Metalized Surface Facing

- Reduces radiant heat gain and loss
- Blocks 96% of radiant heat transfer
- Saves energy use
- Lowers heating / cooling costs
- Improves interior comfort

Multi-Layer Bubble Core

- Provides continuous thermal break
- Lowers risk of interior surface condensation
- Durable and long-lasting
- Superior puncture, tensile and tear strength
- Will not absorb water or vapor
- Does not harbor moisture or mold
- Clean, safe, no-itch material

White Interior Facing Option

- Brightens building interior
- Attractive appearance
- Easy to clean

Practical Tab/Edge Options

- Various options for all metal building applications
- Simplifies installations
- Improves vapor-sealing efforts

Quick Seam (Adhesive Tape on Tab)

- Saves time and labor
- Ensures a continuous vapor and condensation barrier
- Simplifies and speeds installation

PRODUCT SIZES

- Width: 12", 16", 18", 24", 48" and 72"
- Length: 102' and 125'

PRODUCT OPTIONS

- Single or Double Bubble
- Square Edge, Tab 1 Side, Tab 2 Sides, Quick Seam Adhesive Strip

PRODUCT SPECIFICATIONS



Physical Properties	Test	Double Layer	Single Layer
NOMINAL THICKNESS	—	5/16"	3/16"
FIRE RATING	ASTM E84-09 / ASTM E2599-08	CLASS 1 / CLASS A	
FIRE TESTING	NFPA 286	PASSES	
EMISSIVITY	ASTM C1371-04A	0.04	0.04
REFLECTIVITY	ASTM E903	0.96	0.96
WATER VAPOR PERMEABILITY	ASTM E96	0.12 Perms	0.01 Perms
RESISTANCE TO FUNGI & BACTERIA	ASTM C1149	DOES NOT PROMOTE GROWTH	
PLIABILITY	ASTM C1224-03	NO CRACKING	
BLEEDING AND DELAMINATION	ASTM C1224-03	NO BLEEDING OR DELAMINATION	
CORROSIVENESS	ASTM D3310-00	PASSES	
UV TESTING	ASTM G155	4000hrs Exposure 90+% Retain Retention	

Warranty, Specific Applications and Installation Guides can be found at **www.rfoil.com**

Verified by RIMA International™ REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION US-006-10

COVERTECH FLEXIBLE PACKAGING A Division of Covertech Fabricating Inc.

PATENTED (See website for details) www.rFOIL.com

WWW.WILLOWSRA.COM

rFOIL™ Reflective Insulation

Adhesive Tapes

(15000 Series)

Recommended For:

- All **rFOIL™** insulation products and related applications
- Maintaining a vapor barrier and constant insulator



Seals:

- Seams
- Gaps
- Tab sections
- Rips
- Tears



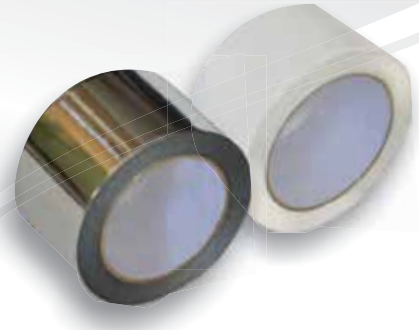
Benefits:

- Economical
- Quick and easy to install
- Approved vapor barrier
- Available in a variety of sizes to suit your needs

rFOIL™ Adhesive Tapes are available in three varieties: Aluminum, White Poly and Metalized Foil.

All **rFOIL™** tapes provide an excellent vapour barrier seal and are specifically designed for use with all **rFOIL™** Insulation Products.

Acrylic pressure sensitive adhesive combines superior quick-stick at normal temperatures, with excellent low temperature performance below freezing.



www.rFOIL.com

rFOIL™ Reflective Insulation

Adhesive Tapes

(15000 Series)

FEATURES — BENEFITS

Metalized Foil & Aluminium Tapes

FEATURES	BENEFITS
- Soft, Metalized Foil / Aluminum Foil	- Conforms to irregular surfaces - Maintains reflective / radiant barrier
- Pressure Sensitive Acrylic Adhesive	- Adheres well to rFOIL™, sheet metal, and more! - Effective in hot and cold climates - Forms strong bond for long life adhesion

White Poly Tape

FEATURES	BENEFITS
- Polypropylene Material	- Durable to withstand installation - Adheres to any polyethylene or related material - Conforms to foil or poly to give the seamless look
- Acrylic Adhesive	- Will adheres to poly or aluminium faced rFOIL™ - Adheres in all four seasons - Will seal seams effectively for many years

Applications

STANDARD METALIZED FOIL TAPE:	- Sealing seams in all Metalized Surface rFOIL products.	(Class 1/A Application)
PREMIUM METALIZED FOIL TAPE:	- Sealing seams in all Metalized Surface rFOIL products [High Tack adhesive]	(Class 1/A Application)
ALUMINUM FOIL TAPE:	- Sealing seams in all Aluminum Surface rFOIL products.	(Class 2/B Application)
WHITE POLY TAPE:	- Sealing seams in all Poly Surface rFOIL products.	(Class 1/A Application)

PRODUCTS — SPECIFICATIONS

AVAILABLE IN:
- Standard Metalized Foil
- Premium Metalized Foil
- Aluminum Foil
- White Poly

SIZES:
- Width: 2" or 3"
- Length 150' (for Premium, Poly and Aluminum tape)
- Length 180' (for Standard tape only)

Physical Properties	STANDARD METALIZED FOIL	PREMIUM METALIZED FOIL	ALUMINUM FOIL	WHITE POLY
THICKNESS	3.0 MILS (0.003")	3.2 MILS (0.0032")	2.7 MILS (0.0027")	3.0 MILS (0.003")
ADHESION	41 oz. / in.	60 oz. / in.	—	16.0 oz. / in. (to Poly)
PEEL	—	—	98 oz. / in. width	—
BACKING	Metalized Polyester	UV Metalized Polypropylene	UV Metalized Polypropylene	White Polypropylene
ELONGATION	150%	130%	4.4%	130%
TENSILE STRENGTH	22 lbs. / in.	20 lbs. / in.	17 lbs. / in.	20 lbs. / in.
TEMPERATURE RESISTANCE	-37°C to 127°C	-40°C to 85°C	-40°C to 121°C	-40°C to 85°C
ADHESIVE	Acrylic	Acrylic	Acrylic	Acrylic

Warranty, Specific Applications and Installation Guides can be found on our Applications Manuals or at www.rfoil.com



COVERTECH FABRICATING INC

WWW.WILLOWSRA.COM

Accessories







elbi

Bell & Gossett
a xylem brand

Bell & Gossett
a xylem brand



NRF-22

$146.67



NRF-25

$160.00



NRF-36

$442.22



ECOCIRC 19-16

$377.78

CIRCULATORS ecocirc® 19-16

Description

ecocirc® 19-16 is a TRUE Variable Speed ECM Circulator with energy efficient spherical motor technology. Higher Efficiency and Improved Performance The ecocirc® 19-16 is a Smart, User-friendly, TRUELY variable speed circulator which is ideally suited for use in heating, cooling and potable water application. Designed to be set once and forgotten. The onboard intelligence automatically adjusts speed to ensure maximized efficiency and accurate performance to suit a wide range of performance requirements.

The ecocirc is setting new standards! ecocirc® 19-16 is a TRUE Variable Speed ECM Circulator with energy efficient spherical motor technology.





Standard Modes of Operation

1. Proportional Pressure (factory default mode) Sensorless control mode that automatically adjusts differential pressure and flow according to the selected proportional pressure curve. This mode is recommended for use in systems with high pressure losses in the system. Identified by blue LED lit behind the adjustment dial.
2. Constant Pressure Sensorless control mode that automatically maintains a constant differential pressure by varying the flow according to the selected pressure curve. This mode of operation is preferred in systems with relatively small pressure losses in distribution systems. Identified by green LED lit on the adjustment dial.
3. Constant Speed The pump maintains a fixed speed at any flow demand, based on the curve that is set on the adjustment dial. identified by the white light lit on the speed adjustable dial.

Auxiliary Modes

1. Automatic Air Purge Air trapped in the pump housing can be purged using this function.
2. Standby This helps to keep the power consumption low.

Materials of Construction

Pump Body: Cast Iron and Stainless Steel
O-Ring: EPDM
Bearing: Carbon/Alumina Ceramic
Impeller: Nylon/PPO
Motor: High Efficiency ECM/PM
All Other Wetted Parts: Stainless Steel

Operating Data

Maximum Working Pressure: 150 PSI (10 Bar)
Maximum Working Temperature: 203°F (95°C)
Minimum Working Temperature: 14°F (-10°C)

Motor

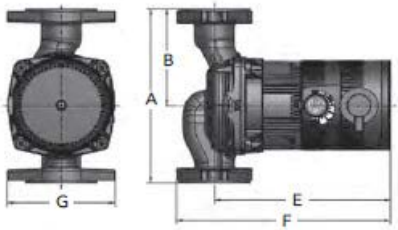
ECM spherical motor
115 Volt 60 Hz, 1 Phase
4-60 Watts Variable Power Consumption
Automatic Overload Protection
Low in-rush current

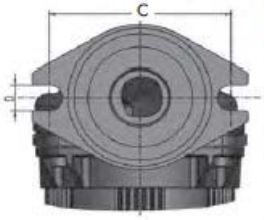
Piping Connection

Flanged, 2-Bolt
For use with 3/4", 1, 1 1/4" or 1 1/2" inch pipe

Check Valve

1" Noryl Check Valve
Shipped loose for field installation





	Dimensions
A	6.38" (162mm)
B	3.54" (90mm)
C	3.15" (80mm)
D	0.47" (12mm)
E	6.09" (154mm)
F	7.4" (188mm)
G	3.74" (95mm)

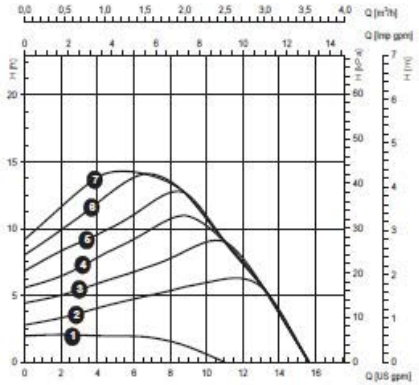
Model Number	Part Number	Pump Body	Shipping Weight
ecocirc 19-16	6050B2003	Cast Iron	7.25 lb
ecocirc 19-16	6050B2004LF	Stainless Steel	7.00 lb

CIRCULATORS ecocirc® 19-16

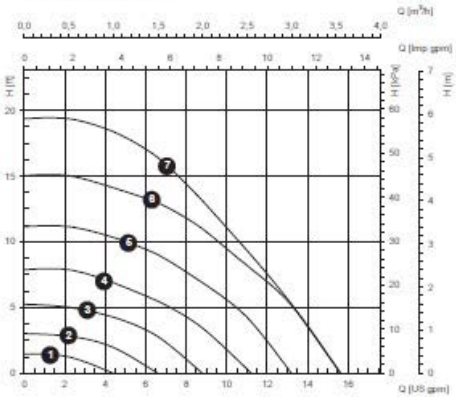


Always easy to access. The screw ring design results in a pump motor that can be rotated in any position around the 360° circle. Therefore the electrical connection as well as the control dial is easy to access.

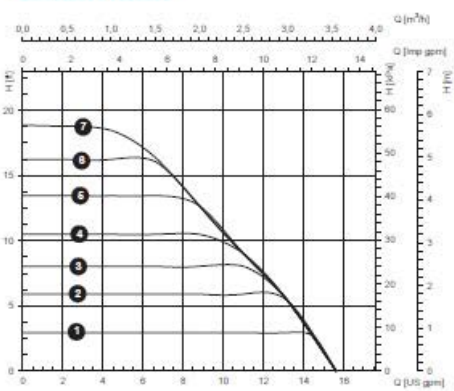
Proportional Pressure (default mode)



Constant Speed



Constant Pressure



CIRCULATORS Bell & Gossett Cast Iron Wet Rotor Circulators / NRF

Description

A residential or light commercial, maintenance free, axial flanged, in-line, cast iron, wet rotor circulation pump for hydronic heating systems. UL and cUL Listed.

Operating Data

Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature:
NRF-22 & NRF-9F/LW: 240°F (115°C)
NRF-25, NRF-33, NRF-36 & NRF-45: 225°F (107°C)

Materials of Construction

Pump Body: Cast Iron
Impeller: Noryl
Shaft: Ceramic
Bearings: Double-Sintered Carbon

Warranty

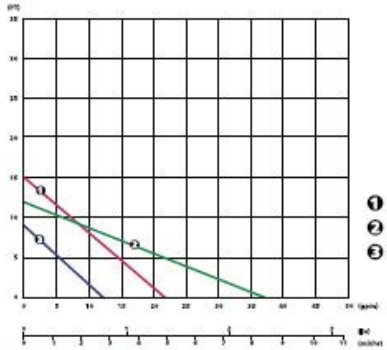
Bell & Gossett offers a warranty of 3 years from date of manufacture or 18 months from date of installation (which ever comes first) against failure as a result of defects in materials and workmanship.

Specifications

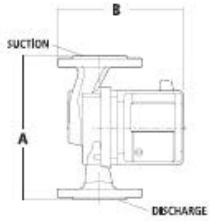
Model Number	Single Speed	Three Speed	Part Number	Flange Sizes Inches - NPT	Dimensions Inches (mm)			Standard 60 Cycle Motor Characteristics*					Shipping Weight lbs. (Kg)
					A	B	C	Watts	ø	Volts	F.L. Amps	RPM	
NRF-9F/LW	•		103267	3/4, 1, 1 1/4, 1 1/2	6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	41	1	115	0.40	2800	9.3 (4.2)
NRF-22	•		103251		6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	92			0.80	2940	9.3 (4.2)
NRF-25		•	103417		6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	125			1.20	2950	10.4 (4.7)
NRF-33	•		103350		6 3/8 (162)	5 9/16 (141)	4 7/8 (124)	125			1.10	2950	10.4 (4.7)
NRF-36		•	103400		6 3/8 (162)	6 7/8 (175)	5 3/4 (146)	270			2.30	3300	13.1 (6.0)
NRF-45		•	103404	1, 1 1/4, 1 1/2	8 1/2 (216)	7 3/8 (187)	5 3/4 (146)	270			2.30	3300	14.5 (6.6)

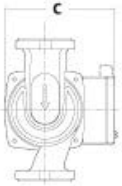
NRF-9F/LW, NRF-22, NRF-25 and NRF-33 are impedance protected.
NRF-36 and NRF-45 are thermally protected.
Dimensions are approximate and subject to change. Contact factory for certified dimensions.

Single Speed NRF Circulator Performance Curves



❶ NRF-22
❷ NRF-33
❸ NRF-9F/LW





Single Speed NRF Circulators



NRF-9F/LW



NRF-22



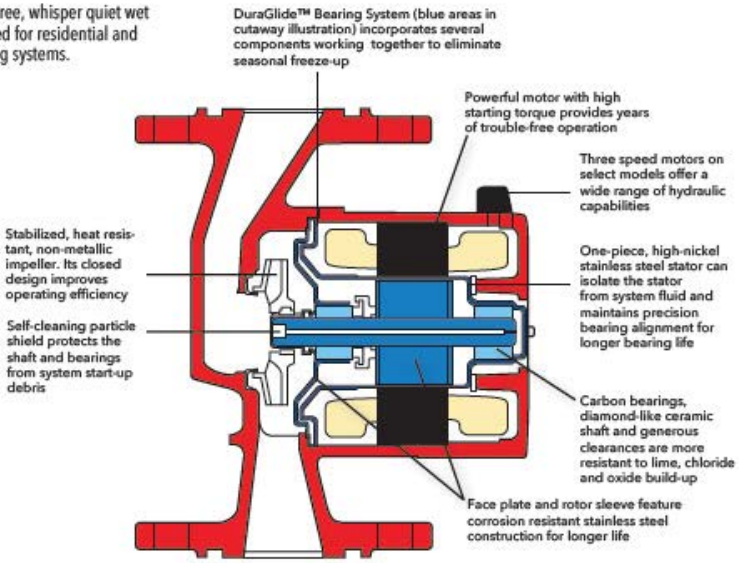
NRF-33

c UL us

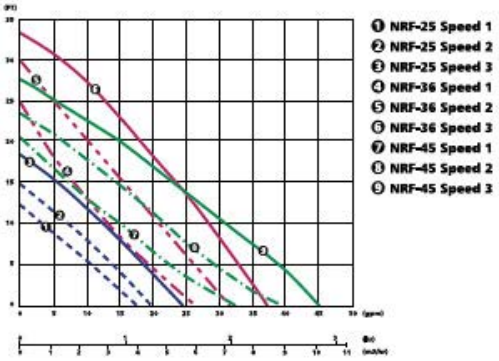
WWW.WILLOWSRA.COM

CIRCULATORS Bell & Gossett Cast Iron Wet Rotor Circulators / NRF

Reliable, maintenance-free, whisper quiet wet rotor circulators designed for residential and light commercial heating systems.



Three-Speed NRF Circulator Performance Curves



Optional Zone Pump Relay Control



The ZoneTrol II AZ-1A is a single zone pump relay that turns the pump and boiler on when the thermostat calls for heat. The AZ-1A is ideal when adding a zone to an existing system and can be daisy-chained together to control multiple zones (See page 25.)

Three-Speed NRF Circulators



NRF-25



NRF-36



NRF-45

Expansion Tanks - ASME and NON-ASME



Elbi "XT" Series Expansion Tanks Available in Vertical and in line models.
For heating systems.





Elbi "DXT" Series Thermal Expansion Tanks. Available in Vertical and in line models. **For potable water.**



Elbi "DWT" Series Well Tanks. Available in Vertical and in-line models.



Elbi Tanks are a great addition to any product lineup. With a huge selection of ASME and NON ASME models to choose from at a competitive price whychoose anyone else. Please feel free to give us a call to get current pricing.

Special order items ship factory direct to save you money!

- Elbi ASME Code Products
- Well Tanks
- Thermal Expansion Tanks
- Hydronic heating Tanks
- Air Separators
- All Replaceable Bladders

Elbi Expansion Tanks



"XT" SERIES EXPANSION TANKS
Base Price List

IN-LINE MODELS

Model Number	Capacity In U.S. Gallons	Weight (Lbs.)	Acceptance Volume*	Quantity per Pallet	LIST Price
XT-15	2.1	6	1.4	150	$51.60
XT-30	5	9.5	3	70	$62.47
XT-60	6.5	10.5	4.2	70	$88.44
XT-90	13.5	19.5	8.5	33	$217.91

Elbi Expansion Tanks

ALL TANKS SPECIAL ORDER





Item #	Description	List Price
Elbi:HTS- 8	Elbi ASME 2 gal Replaceable Bladder Expansion Tank	$654.22
Elbi:HTS- 19	Elbi ASME 5 gal Replaceable Bladder Expansion Tank	$851.00
Elbi:HTS- 30	Elbi ASME 8 gal Replaceable Bladder Expansion Tank	$1,252.22
Elbi:HTS- 45	Elbi ASME 12 gal Replaceable Bladder Expansion Tank	$1,564.00
Elbi:HTS- 80	Elbi ASME 21 gal Replaceable Bladder Expansion Tank	$1,727.56
Elbi:HTS-100	Elbi ASME 26.5 gal Replaceable Bladder Expansion Tank	$2,057.22
Elbi:HTS-140	Elbi ASME 37 gal Replaceable Bladder Expansion Tank	$2,287.22
Elbi:HTL- 170	Elbi ASME 45 gal Replaceable Bladder Expansion Tank	$2,504.44
Elbi:HTL- 200	Elbi ASME 53 gal Replaceable Bladder Expansion Tank	$2,606.67
Elbi:HTL- 300	Elbi ASME 80 gal Replaceable Bladder Expansion Tank	$2,844.33
Elbi:HTL- 400	Elbi ASME 105 gal Replaceable Bladder Expansion Tank	$3,373.33
Elbi:HTL- 450	Elbi ASME 121 gal Replaceable Bladder Expansion Tank	$4,094.00
Elbi:HTL- 500	Elbi ASME 132 gal Replaceable Bladder Expansion Tank	$4,209.00
Elbi:HTL- 600	Elbi ASME 160 gal Replaceable Bladder Expansion Tank	$4,980.78
Elbi:HTL- 800	Elbi ASME 210 gal Replaceable Bladder Expansion Tank	$5,737.22
Elbi:HTL-1000	Elbi ASME 265 gal Replaceable Bladder Expansion Tank	$6,153.78
Elbi:HTL-1200	Elbi ASME 320 gal Replaceable Bladder Expansion Tank	$8,300.44
Elbi:HTL-1400	Elbi ASME 370 gal Replaceable Bladder Expansion Tank	$8,510.00
Elbi:HTL-1600	Elbi ASME 420 gal Replaceable Bladder Expansion Tank	$9,631.89
Elbi:HTL-2000	Elbi ASME 530 gal Replaceable Bladder Expansion Tank	$10,807.44
Elbi:HTL-3000	Elbi ASME 790 gal Replaceable Bladder Expansion Tank	$18,075.44
Elbi:HTL-4000	Elbi ASME 1060 gal Replaceable Bladder Expansion Tank	$23,293.89
Elbi:HTL-5000	Elbi ASME 1320 gal Replaceable Bladder Expansion Tank	$26,723.44

Expansion Tanks Cross Reference Chart



Elbi	Flexcon	Vent-Rite	Amtrol	Watts	State	B&G	Sparco
XT - 15	HT-15	VR-15-FG	15	ET-15	ET-2	HFT-15	TK3000-15
XT - 30	HT-30	VR-30-FG	30	ET-30	ET-5	HFT-30	TK3000-30
XT - 60	HT-60	VR-60-FG	60	ET-60	ET-7	HFT-60	TK3000-60
XT - 90	HT-90	VR-90-FG	90	ET-90	ET-14	HFT-90	TK3000-90
XTV - 030	SXHT-30	SXVR-30-FG	SX-30	NA	ET-15	HFT-30V	XPS-30
XTV - 040	SXHT-40	SXVR-40-FG	SX-40	NA	ET-20	HFT-40V	XPS-40
XTV - 060	SXHT-60	SXVR-60-FG	SX-60	NA	ET-36	HFT-60V	XPS-60
XTV - 090	SXHT-90	SXVR-90-FG	SX-90	NA	ET-52	HFT-90V	XPS-90
XTV - 110	SXHT-110	SXVR-110-FG	SX-110	NA	ET-86	HFT-110V	XPS-110
XTV - 160	SXHT-160	SXVR-160-FG	SX-160	NA	ET-96	HFT-160V	XPS-160



XT-XTV Series - Expansion Tanks

elbi

Elbi's XT-XTV Series Expansion Tanks...



The XT-XTV Series diaphragm expansion tanks are available in sizes from 2 to 80 gallons in either in-line or stand models (see chart). Designed and manufactured by Elbi since 1975, the XT-XTV Series expansion tanks are solid and have proven reliable in millions of installations worldwide.

The two shell welded construction allows the tank to withstand high pressure ratings and therefore adds safety to your system. The BUTYL diaphragm separates the air from the water and prevents waterlogging while saving space and energy. Product is intended for use in hot water, solar and cooling systems and is compatible with glycol. Call our factory for compatibility and suitability in special applications.



FEATURES AND BENEFITS

FEATURE	BENEFIT
• WELDED STRONG CONSTRUCTION	Steel shells are designed to withstands high pressure loads and add safety to your installation. Tanks are sturdy and built to last while at the same time they are lightweight, easy to handle and simple to install.
• HEAVY DUTY BUTYL DIAPHRAGM	Withstands temperatures as high as 240°F. Of solid construction, manufactured in house through an injection molding process. Made of proprietary food quality compound which will not release taste or odors in the water. Compatible with glycol, solar and cooling systems.
• EPOXY GRAY PAINT FINISH	Provides an attractive, durable appliance like finish obtained through an oven baking process of the epoxy paint powder.
• 12 PSI FACTORY PRECHARGE ON ALL MODELS	Suits most common installations. The precharge can be manually adjusted on site.

DIMENSIONAL DATA

Model Number	Capacity (Gal.)	Acceptance Volume* (Gal.)	Conn. NPTM (in.)	Max. Working Pressure (PSIG)	Factory[1] Precharge (PSIG)	Max.Working Temperature (° F)	Diameter (in.)	Height (in.)	Weight (lbs.)
IN-LINE MODELS									
XT-15	2.1	1.4	1/2 "	150	12	210	8	11 3/4	6.34
XT-30	5.0	3.0	1/2 "	150	12	210	10 1/2	15	11.50
XT-60	6.5	4.2	1/2 "	150	12	210	10 3/4	17	13.72
XT-90	13	8.5	1"	150	12	210	15 3/4	20	24
STAND MODELS									
XTV-30	13	8.5	1"	150	12	210	15 3/4	25	27.16
XTV-40	21	14	1"	90	12	210	15 3/4	32	41.16
XTV-60	27	17	1"	90	12	210	20	29 1/2	48.16
XTV-90	40	26	1"	90	12	210	20	38	63.16
XTV-100	53	36	1"	90	12	210	24	42 1/3	80.16
XTV-110	66	42	1"	90	12	210	26	40 1/2	90.2
XTV-160	80	52	1"	90	12	210	26	45	111.16



* At 60 PSIG; Maximum working pressure allowed in Canada: 30 PSIG
** When installed in normal environmental conditions. By normal enviromental conditions it is meant environments which are free of acids, scale or chemical deposits or other factors known to affect paints, coatings and metals.
1) Factory precharge can be affected by variations in environmental conditions (ex. temperature changes) and systems conditions (ex. pressure changes). Product should be carefully inspected upon receipt and all charges should be adjusted to fit your particular system installation.

XT-XTV EXPANSION TANKS - SELECTION TABLES

TABLE 1 - TYPE OF RADIATION

Boiler Net Output*	Fin tube baseboard or radiant panels	Convectors or unit heaters	Cast iron radiators	Cast iron baseboard
25	XT-15	XT-15	XT-15	XT-15
50	XT-15	XT-15	XT-30	XT-30
75	XT-30	XT-30	XT-30	XT-60
100	XT-30	XT-30	XT-60	XT-60
125	XT-30	XT-60	XT-60	XT-90
150	XT-30	XT-60	XT-90	XT-90
175	XT-60	XT-60	XT-90	XT-90
200	XT-60	XT-60	XT-90	XT-90
250	XT-60	XT-90	XT-90	XTV-40
300	XT-90	XT-90	XT-90	XTV-40
350	XT-90	XT-90	XTV-40	XTV-60
400	XT-90	XTV-40	XTV-40	XTV-60

* in 1000s BTU/Hour - Fill pressure 12 PSIG/ Relief Pressure 30 PSIG/Average System Temperature 200° F

TABLE 2 - SYSTEM CONTENT

System Content	100°F	110°F	120°F	130°F	140°F	150°F	160°F	170°F	180°F	190°F	200°F	210°F
25	XT-15	XT-15	XT-15	XT- 15	XT-15	XT-15	XT-15	XT-15	XT-15	XT-15	XT-30	XT-30
50	XT-15	XT-15	XT-15	XT-15	XT-15	XT-30	XT-30	XT-30	XT-30	XT-30	XT-30	XT-30
75	XT-15	XT-15	XT-15	XT-30	XT-30	XT-30	XT-30	XT-30	XT-60	XT-60	XT-60	XT-90
100	XT-15	XT-15	XT-30	XT-30	XT-30	XT-30	XT-60	XT-60	XT-90	XT-90	XT-90	XT-90
200	XT-30	XT-30	XT-30	XT-60	XT-90	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-40	XTV-40
300	XT-30	XT-60	XT-90	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-40	XTV-60	XTV-60	XTV-90
400	XT-60	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-40	XTV-60	XTV-90	XTV-90	XTV-90	XTV-90
500	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-60	XTV-60	XTV-90	XTV-90	XTV-90	XTV-100	XTV-100
600	XT-90	XT-90	XTV-40	XTV-40	XTV-60	XTV-60	XTV-90	XTV-90	XTV-100	XTV-100	XTV-100	XTV-110
700	XT-90	XT-90	XTV-40	XTV-60	XTV-60	XTV-90	XTV-90	XTV-100	XTV-100	XTV-110	XTV-110	XTV-160
800	XT-90	XTV-40	XTV-40	XTV-60	XTV-90	XTV-90	XTV-100	XTV-100	XTV-110	XTV-110	XTV-160	XTV-160
900	XT-90	XTV-40	XTV-60	XTV-90	XTV-90	XTV-90	XTV-100	XTV-110	XTV-110	XTV-160	XTV-160	2 x XTV-100
1000	XTV-40	XTV-40	XTV-60	XTV-90	XTV-90	XTV-110	XTV-100	XTV-110	XTV-160	XTV-160	2 x XTV-100	2 x XTV-100

Fill pressure: 12 PSIG, Relief pressure: 30 PSIG, System Fill Temperature: 40°F

MAINTENANCE

It is recommended that a periodic maintenance inspection of the complete heating system be performed by a professional licensed plumber. The inspection must be done at least once a year and, during such check, the tank's precharge should be tested and adjusted to the correct pressure if necessary. Failure to perform periodic maintenance will void all warranty.
We strongly recomend the use of dielectric union when connecting dissimilar metals.

PACKAGING AND SHIPPING DATA

Model Number	Packaging Dimensions (in.)	Volume (cu.ft.)	Quantity per Pallet
IN-LINE MODELS			
XT-15	8.43x8.43x12.60	0.35	162
XT-30	10.83x10.83x17.52	1.06	70
XT-60	13.00x13.00x14.76	1.41	70
XT-90	16.14x16.14x21.06	3.08	33
STAND MODELS			
XTV-30	16.14x16.14x24.02	3.52	33
XTV-40	16.14x16.14x33.86	4.96	22
XTV-60	20.08x20.08x32.68	7.40	10
XTV-90	20.08x20.08x40.94	9.27	8
XTV-100	24.02x24.02x41.34	13.40	8
XTV-110	25.98x25.98x47.64	18.07	6
XTV-160	25.98x25.98x50.39	19.11	6

*Quantity per pallet may vary depending on the size of the pallets and the limitations presented by the means of transportation used when shipping out the product to its final destination. In case there are differences between the quantities per pallet listed here and the actual quantity per pallet loaded, you will be contacted by one of our staff members.

WARRANTY

Elbi's XT - XTV Series tanks are guaranteed to be free of workmanship or material defects for a period of five (5) years from the date of manufacturing. For a complete description of our warranty policy consult the literature which comes with the product or call our offices to request a copy.

WWW.WILLOWSRA.COM









Who We Are...

Elbi has over 30 years of experience in tank manufacturing and a worldwide reputation for quality, offering an extensive line of products which satisfy the taste and exigency of all modern installations in water distribution, water storage, water heating and water treatment systems. We are represented in all major world markets either by a network of authorized distributors or by direct presence. Our widespread presence ensures that our lines of products always keep up with all technological advances.

Our most valuable assets are experience and reputation. We take pride in equipping our plants with the most modern production equipment including robotic systems, CAD/CAM machines and automatic welding and assembly systems.

Product design is handled by our internal development team, our testing facilities and quality control services which ensures that you get a quality product from design to installation. All of the components are manufactured in house to ensure total control of the manufacturing process, this includes our butyl diaphragm.



Our manufacturing plant, located in Houston TX, started operations in 1990 and since 2000 has become fully operational. Another plant located in northern Italy is dedicated to the manufacturing of our diaphragms and bladders through modern injection molding processes, and holds the quality control of these critical components in-house.

elbi



Heat-flo

STAINLESS STEEL INDIRECT WATER HEATERS

Call for Pricing



Heat-flo's high efficiency indirect water heaters are made with quality stainless steel materials that provide excellent heat transfer and a longer tank life, as well as abundant hot water and low operating costs. Indirect water heaters work in conjunction with a boiler to heat the water that's circulated through the heat exchanger in the tank.

When paired with an high efficiency boiler, Heat-flo's indirect water heaters can generate over 50% more hot water than many water heaters of similar size.

FEATURES AND BENEFITS INCLUDE:

QUALITY DESIGN & CONSTRUCTION

- Tanks and coils are all stainless steel construction.
- Large, smooth-wall coils deliver full output for years - no finned tubing to collect lime and sediment.
- Over 2" of insulation, providing less than 1° / hr. heat loss.
- Flexible theromplastic jacket that will not corrode and resists denting.

EASY INSTALLATION

- All connections are on top on the standard units for a neat, quick, and clean installation.
- Brass drain and relief valves are factory installed.
- Honeywell L4080B Aquastat control is standard.

RESIDENTIAL & COMMERCIAL

- Models are available in 30, 40, 50, 60, 80, and 115 gallon sizes.
- Bank together 80 and 115 gallon units for applications with high water heating demands.
- Limited warranty residential installation, 5 year commercial.

SYSTEM CONNECTION CONFIGURATIONS FOR EACH MODEL



WWW.WILLOWSRA.COM



DIMENSIONS & CAPACITIES

MODEL	Storage Volume	Coil Heating Surface	Dimensions (inches)		Piping Connections NPT		Max. Tank Working Pressure	Max. Coil Working Pressure	Approximate Shipping Wt.
					Domestic Water	Boiler Water			
	(Gal.)	(Sq. ft)	(Ht.)	(Dia.)	In/Out	In/Out	(psi)	(psi)	(Lbs.)
HF-30	30	7.3	34.0	23.5	3/4	1	150	90	85
HF-40	40	7.7	44.0	23.5	3/4	1	150	90	100
HF-40L	42	7.4	36.0	28.0	3/4	1	150	90	100
HF-50	50	8.2	54.0	23.5	3/4	1	150	90	110
HF-60	60	8.6	62.0	23.5	3/4	1	150	90	125
HF-60L	60	7.7	46.0	28.0	3/4	1	150	90	120
HF-80	80	8.2	56.0	28.0	1	1	150	90	140
HF-115	115	9.1	74.0	28.0	1	1	150	90	175
HIGH OUTPUT UNITS									
HF-60-HO	60	15.1	62.0	23.5	1	1	150	90	140
HF-80-HO	80	14.8	56.0	28.0	1	1	150	90	155
HF-80-HO-C	80	14.8	56.0	28.0	1 1/2	1 1/4	150	90	155
HF-115-HO	115	15.6	74.0	28.0	1	1	150	90	190
HF-115-HO-C	115	15.6	74.0	28.0	1 1/2	1 1/4	150	90	190
HF-85-XHO	87	28.7	64.0	28.0	1 1/2	1 1/2	150	90	215
HF-115-XHO	115	28.7	74.0	28.0	1 1/2	1 1/2	150	90	240

180° F BOILER SUPPLY RATINGS

MODEL	First Hour Rating (Gal./Hr.)		Continuous Rating (Gal./Hr.)		Boiler Output Needed	Boiler Water Flow Through Coil	Pressure Drop Through Coil
	140° F	115° F	140° F	115° F	(BTU/Hr.)	(Gal./Min.)	(Ft. Water)
HF-30	176	233	149	206	111,560	14.0	5.3
HF-40	193	254	157	218	117,870	14.0	5.7
HF-40L	186	251	150	157	112,200	14.0	5.3
HF-50	196	254	151	209	113,290	14.0	6.0
HF-60	231	298	177	244	132,340	14.0	6.2
HF-60L	211	272	157	218	117,785	14.0	5.7
HF-80	241	306	169	234	126,980	14.0	6.0
HF-115	291	363	188	260	140,890	14.0	6.0
HIGH OUTPUT UNITS							
HF-60-HO	353	468	299	414	220,880	14.0	10.1
HF-80-HO	366	479	294	407	220,440	14.0	9.9
HF-80-HO-C	386	507	314	435	235,510	21.0	10.5
HF-115-HO	413	532	310	429	232,135	14.0	15.8
HF-115-HO-C	423	545	320	442	239,530	21.0	16.7
HF-85-XHO	649	868	571	790	428,000	28.0	13.0
HF-115-XHO	674	893	571	790	428,000	28.0	13.0

Note: All ratings are based on 180°F boiler water supply and 50°F cold water inlet.
In the interest of continuous improvement, specifications are subject to change without notice.

Intertek

Conforms to UL STD 174 and NSF/ANSI 372
Certified to CAN/CSA STD C22.2 No. 110-94

****Call for Pricing****

RAISING THE STANDARD



WWW.WILLOWSRA.COM

Heat-flo

HOT WATER BOOSTER/ STORAGE TANKS

Call for Pricing



Heat-flo's Hot Water Storage / Booster Tanks offer high quality and high efficiency and are engineered to provide the reliable, abundant hot water that today's larger homes require. Homes with multiple baths, hot tubs, and body sprays increase the requirement for the "dump loads" that tankless coils, instantaneous water heaters, and plate heat exchangers cannot provide.

Adding the ability to store hot water in a storage tank with accurate temperature control reduces boiler fuel consumption because water can be produced and stored at lower temperatures, resulting in reduced burner cycling and more readily available hot water.

FEATURES AND BENEFITS INCLUDE:

QUALITY DESIGN & CONSTRUCTION

- All stainless steel.
- Over 2" of insulation, providing less than 1° / hr. heat loss.
- Flexible theromplastic jacket that will not corrode and resists denting.
- Stainless steel dip tubes.

EASY INSTALLATION

- All connections are on top on the standard units. Connecting to a high-efficiency wall-mount boiler or instantaneous water heater is about as easy as it gets.
- Units are provided with two separate connections for heat source supply and return - resulting in excellent temperature control and no guesswork. Heat source supply and return connections are hydraulically decoupled from cold and hot. High hot water draw rates will not affect the circulator/control performance.
- Drain valve and T&P valve are factory installed.
- Honeywell L4080B control is standard.

RESIDENTIAL & COMMERCIAL

- Models available in 30, 40, 60, 80, and 115 gallon sizes.
- Bank together 80 and 115 gallon units for applications with high water heating demands.

SYSTEM CONNECTION CONFIGURATIONS FOR EACH MODEL



WWW.WILLOWSRA.COM

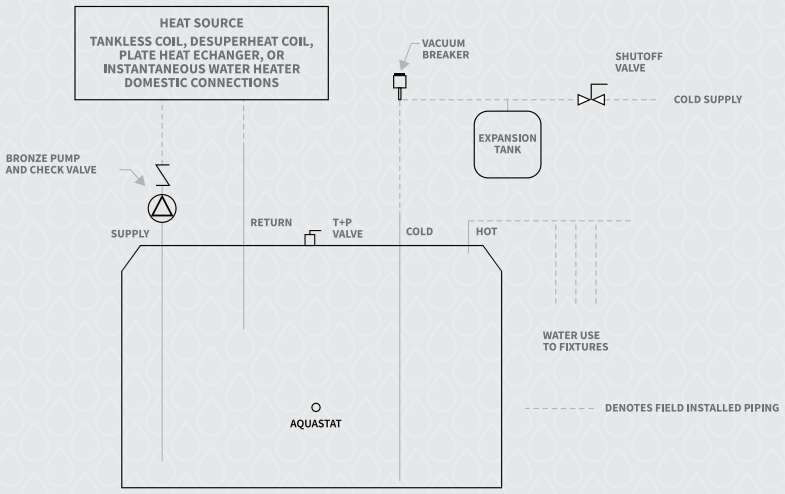


DIMENSIONS & CAPACITIES

MODEL	Storage Volume	Dimensions *(inches)*		Piping Connections NPT		Max. Tank Working Pressure	Approximate Shipping Wt.
				Domestic Water	Supply / Return		
	(Gal.)	*(Ht.)*	*(Dia.)*	*In/Out*	*In/Out*	*(psi)*	*(Lbs.)*
HF-30-ST	30	34.0	23.5	1	1	150	75
HF-40-ST	40	44.0	23.5	1	1	150	90
HF-40L-ST	42	36.0	28.0	1	1	150	90
HF-60-ST	60	62.0	23.5	1	1	150	115
HF-60L-ST	60	46.0	28.0	1	1	150	110
HF-80-ST	80	56.0	28.0	1	1	150	140
HF-115-ST	115	74.0	28.0	1	1	150	175
HF-80-ST-C	80	56.0	28.0	1 1/2	1	150	140
HF-115-ST-C	115	74.0	28.0	1 1/2	1	150	175

****Call for Pricing****

STANDARD DOMESTIC WATER HEATING SYSTEM SCHEMATIC



NOTE: INSTALLATION MUST CONFORM TO ALL LOCAL CODES.

Intertek

Conforms to UL STD 174 and NSF/ANSI 372 Certified to CAN/CSA STD C22.2 No. 110-94

RAISING THE STANDARD



Heat-flo

MULTI-ENERGY TANKS

Call for Pricing



Heat-flo's industry-leading, Multi-Energy Tanks are ideal for a variety of residential and commercial solar hot water and heating applications. Each Multi Energy Tank is available with or without a heat exchanger, in 60, 80 or 115 gallon capacities. Tanks with heat exchangers are available with one or two coil configurations.

Our versatile Heat-flo multi-energy hot water storage tanks configured with heat exchanger coils can be connected directly to solar collectors to maximize efficiency. Units without coils can be connected to external brazed plate heat exchangers. All units are available with or without built-in electric backup.

Units equipped with electric backup are provided with a heating element, thermostat, and controls that can heat the tank if solar heat is not available, ensuring consistent hot water performance. Additionally, all electric backup units are also equipped with a high quality low watt density 240 volt AC, 3500 watt element. All units are equipped with a removable thermal well to accept a solar control thermostat or thermistor.

FEATURES AND BENEFITS INCLUDE:

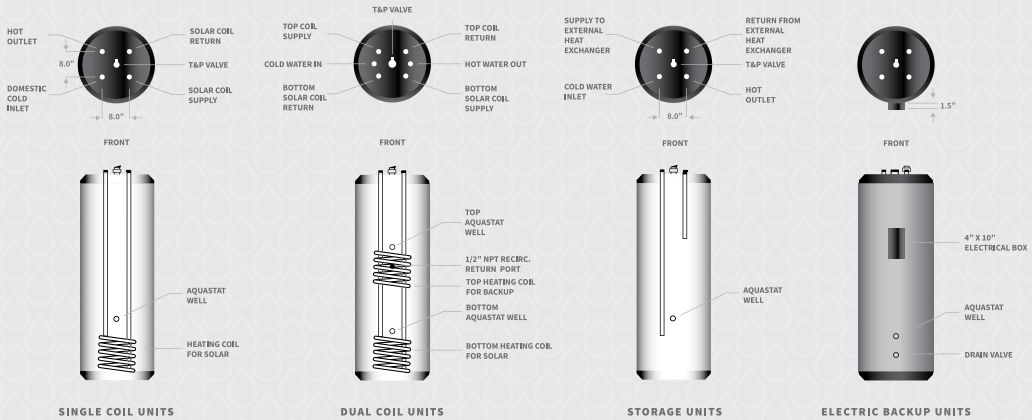
QUALITY DESIGN & CONSTRUCTION

- Tanks and coils are all stainless steel.
- Large, smooth, stainless steel coils; no finned tubing to collect lime and sediment.
- Over 2" of insulation, providing less than 1° / hr. heat loss.
- Flexible theromplastic jacket that will not corrode and resists denting.

EASY INSTALLATION

- All pipe connections are on top for a neat, quick and clean installation.
- Brass drain and relief valves are factory installed.
- Includes thermostat well.
- Large 4" X 10" electrical box with pre-wired heating element, thermostat, and high limit on electric backup units.
- Long life, low watt density element.

SYSTEM CONNECTION CONFIGURATIONS FOR EACH MODEL & TYPE



WWW.WILLOWSRA.COM



DIMENSIONS & CAPACITIES

MODEL	Storage Volume (Gal.)	Top Coil Heating Surface (Sq. Ft.)	Bottom Coil Heating Surface (Sq. Ft.)	Dimensions (inches) Ht.	Dia.	Pipe Connections (NPT)	Max. Working Pressure (psi)	Approximate Shipping Wt. (Lbs.)
SINGLE COIL - NO ELECTRIC BACKUP								
HF-115	115	—	9.1	74.0	28.0	1"	150	175
HF-80	80	—	8.2	56.0	28.0	1"	150	140
HF-60	60	—	8.6	62.0	23.5	1"	150	125
SINGLE COIL WITH 3,500 WATT ELECTRIC BACKUP								
HF-115-E	115	—	9.1	74.0	28.0	1"	150	180
HF-80-E	80	—	8.2	56.0	28.0	1"	150	145
HF-60-E	60	—	8.6	62.0	23.5	1"	150	135
DUAL COIL - NO ELECTRIC BACKUP								
HF-115-D	115	7.4	9.1	74.0	28.0	1"	150	205
HF-80-D	80	7.4	8.2	56.0	28.0	1"	150	175
HF-60-D	60	7.4	8.6	62.0	23.5	1"	150	135
DUAL COIL WITH 3,500 WATT ELECTRIC BACKUP								
HF-115-DE	115	7.4	9.1	74.0	28.0	1"	150	215
HF-80-DE	80	7.4	8.2	56.0	28.0	1"	150	185
HF-60-DE	60	7.4	8.6	62.0	23.5	1"	150	175
STORAGE ONLY - NO COIL, NO ELECTRIC BACKUP								
HF-115-ST	115	—	No Coil Storage Only	74.0	28.0	1"	150	170
HF-80-ST	80	—		56.0	28.0	1"	150	130
HF-60-ST	60	—		62.0	23.5	1"	150	115

MODEL	Top Coil Max Recovery (Gal./Hr.)	Bottom Coil Max. Recovery (Gal./Hr.)	Water Flow Through Coil (Gal./Min.)	Pressure Drop Through Coil (Ft. Water)
115-Gal. Units	190	214	10.0	3.9
80-Gal. Units	180	214	10.0	3.6
60-Gal. Units	185	214	10.0	3.5

FOR ALL UNITS WITH 3,500 WATT ELECTRIC BACKUP

MODEL	First Hour Rating (Gal./Hr.) 140°F	115°F	Continuous Rating (Gal./Hr.) 140°F	115°F
115-Gal. Units	73.9	80.0	15.9	22.0
80-Gal. Units	55.9	62.0	15.9	22.0
60-Gal. Units	45.9	52.0	15.9	22.0

Intertek

Conforms to UL STD 174 and NSF/ANSI 372 Certified to CAN/CSA STD C22.2 No. 110-94

Note: All ratings are based on 180°F boiler water supply and 50°F cold water inlet.
In the interest of continuous improvement, specifications are subject to change without notice.

****Call for Pricing****

RAISING THE STANDARD



WWW.WILLOWSRA.COM

Heat-flo

HYDRONIC BUFFER TANKS



Call for Pricing

Heat-flo's Hydronic Buffer Tanks are designed to be used in closed loop heating systems with low-mass boilers, geothermal systems, and chilled water applications. Utilizing our hydronic buffer tanks improves system efficiency and can extend equipment life by reducing the wear and tear on chillers or boilers due to short cycling.

HF-22-BT

The primary application for the HF-22-BT is to reduce low-mass modulating, condensing boiler short cycling. The high and low left side connections are used for boiler supply and return. The top connection is used to supply the distribution system and the low right connection is the return from the distribution system. If the top connection is piped to the line supplying the air purger and vent, the tank will be self-venting.

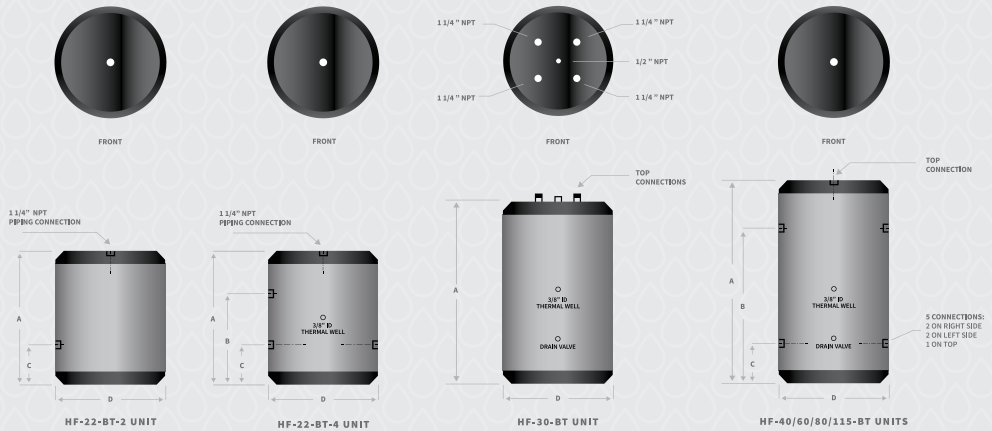
HF-30-BT

The HF-30-BT is designed with 4 – 1 ¼" NPT connections on top, and can be installed under a typical residential mod-con boiler to save space, piping, and labor. Two top connections are connected to the top of the tank, and two top connections direct water to the bottom of the tank via internal stainless steel dip tubes. A ½" connection is in the center of the tank for an air vent.

HF-40-BT THROUGH HF-115-BT

Our hydronic buffer tanks are built with 5 connections: 2 connections can be piped to the chiller or boiler, and 2 connections can be piped to the distribution system. A fifth connection is available for alternate piping configurations. When configured and piped correctly, Heat-flo hydronic buffer tanks can serve as both a thermal buffer and a hydraulic separator - allowing the heating or cooling source to be hydraulically decoupled from the distribution system.

SYSTEM CONNECTION CONFIGURATIONS & DIMENSIONS FOR EACH MODEL



WWW.WILLOWSRA.COM



FEATURES AND BENEFITS INCLUDE:

QUALITY DESIGN & CONSTRUCTION

- All stainless steel.
- Over 2" of insulation, providing less than 1° / hr. heat loss.
- Flexible theromplastic jacket that will not corrode and resists denting.

EASY INSTALLATION

- All pipe connections are on top for a neat, quick and clean installation.
- Brass drain and relief valves are factory installed.

RESIDENTIAL AND COMMERCIAL

- Models available in 22, 30, 40, 60, 80, and 115 gallon sizes.
- Bank together 80 and 115 gallon units for large commercial applications.

DIMENSIONS & CAPACITIES

MODEL	Storage Volume	Dimensions *(Inches)*				Piping Connections	Max. Tank Working Pressure	Approx. Shipping Wt.
	(Gal.)	*A (Ht.)*	*B*	*C*	*D (Dia.)*	*(NPT)*	*(psi)*	*(Lbs.)*
HF-22-BT-2	22	24.5	—	8.0	22.5	1 ¼"	60	35
HF-22-BT-4	22	24.5	15.0	8.0	22.5	1 ¼"	60	35
HF-30-BT	30	34.0	—	—	23.5	1 ¼"	60	77
HF-40-BT-114	40	42.0	31.0	11.0	23.5	1 ¼"	60	87
HF-40-BT-112	40	42.0	31.0	11.0	23.5	1 ½"	60	87
HF-40-BT-2	40	42.0	31.0	11.0	23.5	2"	60	87
HF-60-BT-114	60	44.0	31.5	11.5	28.0	1 ¼"	60	115
HF-60-BT-112	60	44.0	31.5	11.5	28.0	1 ½"	60	115
HF-60-BT-2	60	44.0	31.5	11.5	28.0	2"	60	115
HF-80-BT-114	80	54.0	40.5	11.5	28.0	1 ¼"	60	125
HF-80-BT-112	80	54.0	40.5	11.5	28.0	1 ½"	60	125
HF-80-BT-2	80	54.0	40.5	11.5	28.0	2"	60	125
HF-115-BT-114	115	72.0	61.5	11.5	28.0	1 ¼"	60	160
HF-115-BT-112	115	72.0	61.5	11.5	28.0	1 ½"	60	160
BT-115-BT-2	115	72.0	61.5	11.5	28.0	2"	60	160

****Call for Pricing****

Intertek

Conforms to UL STD 174 and NSF/ANSI 372 Certified to CAN/CSA STD C22.2 No. 110-94

RAISING THE STANDARD



WWW.WILLOWSRA.COM



Willow Springs, SRA

Physical Address:
N7071 US Highway 45
Wittenberg, WI 54499

Mailing Address:
P.O. Box L
Wittenberg, WI 54499

Office: 715-253-3010
Fax: 715-253-2009

www.willowsra.com