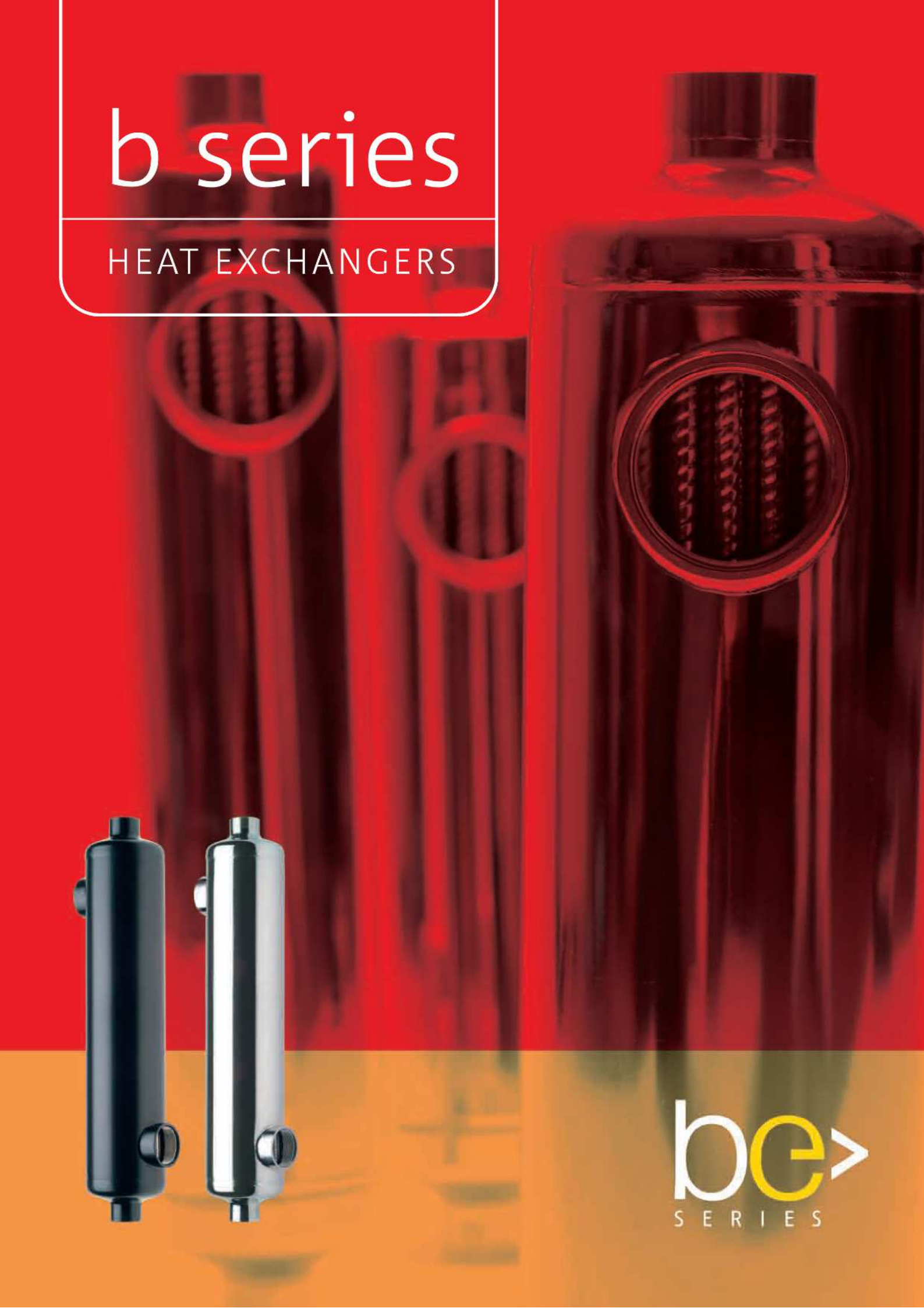
b series

HEAT EXCHANGERS



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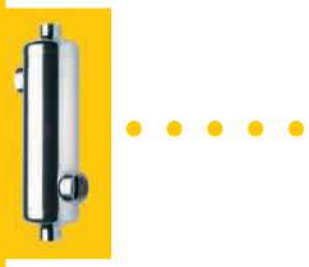
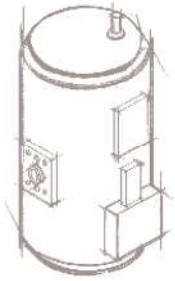
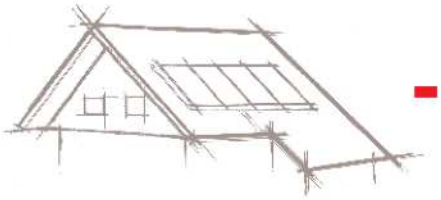
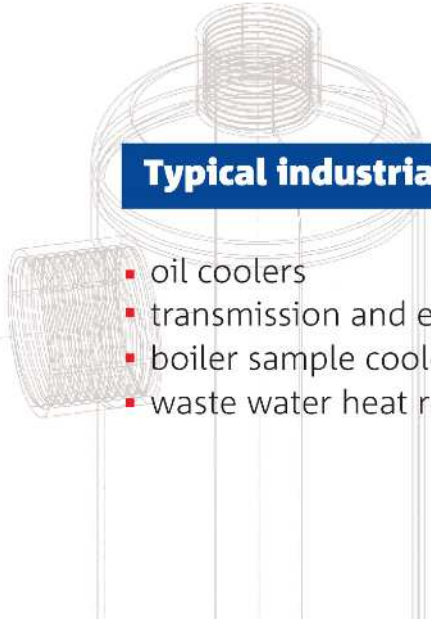


Typical residential applications

- 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

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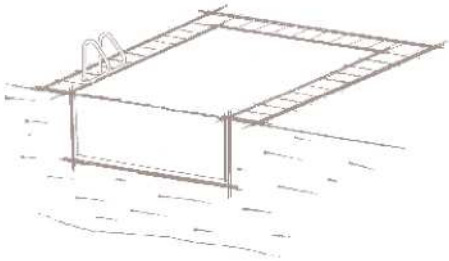
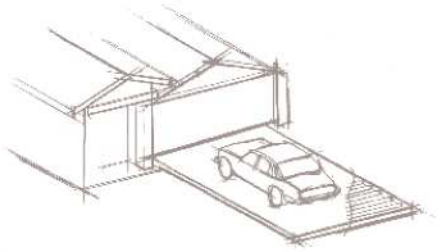
Choosing the right B Series Heat Exchanger





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

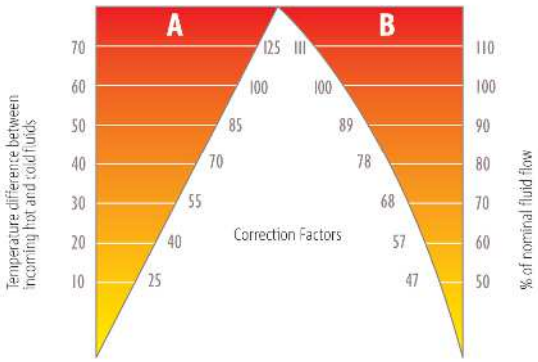
Your Benefits

- 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 x 10^{-2}

Step 4

Solution

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

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

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

Table 2 Nominal Values

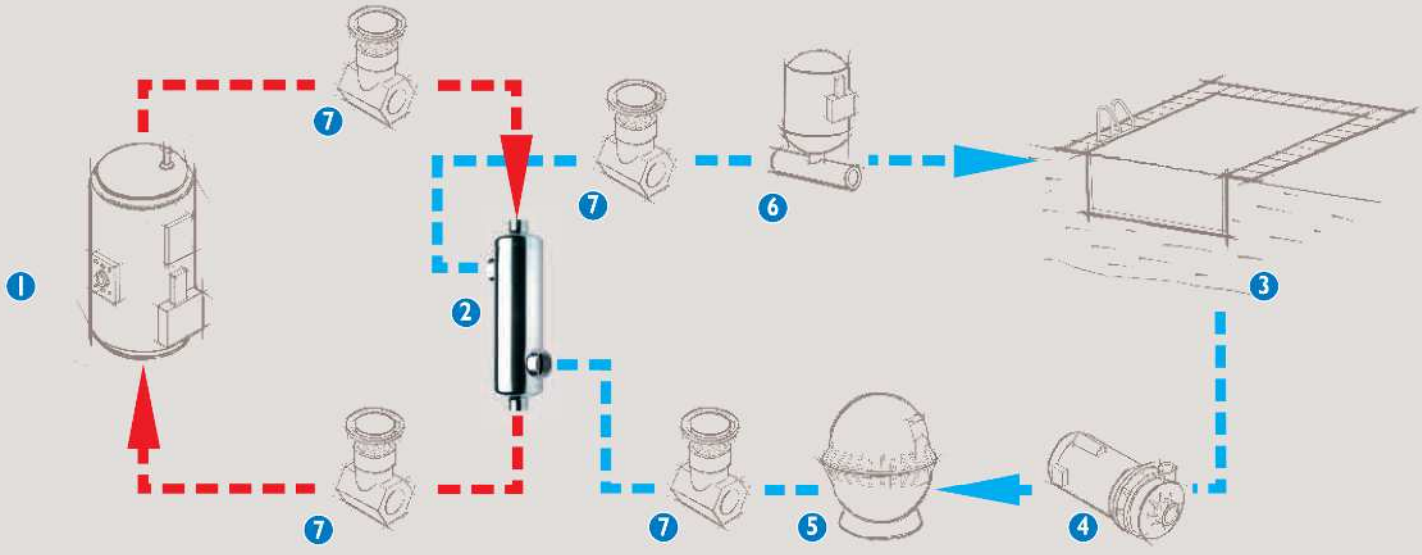
Nominal values are based on 60°C (140°F) temperature between incoming heating and heated water

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



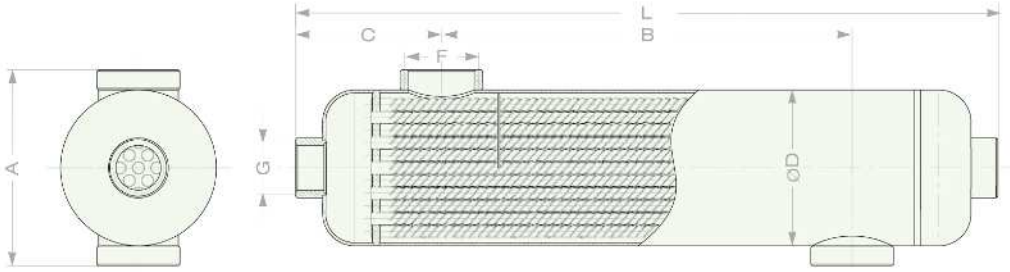
1 Boiler **2** Heat exchanger **3** Swimming Pool **4** Pump **5** Filter **6** Chlorine Feeder **7** Gate Valve

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)	106 (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"		1.609 (17.32)
B 1000	917 (36.10)	167 (6.57)	676.5 (26.63)	120 (4.72)	139.7 (5.5)		2"	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"		1.609 (17.32)
B 1000	912 (35.91)	167 (6.57)	676.5 (26.63)	117 (4.6)	139.7 (5.5)		2"	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.

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Quality you deserve