

Basco® Type HT Hub-Design Heat Exchangers.

Available with short lead times, our highly reliable Type HT hub-design heat exchangers feature cost-effective performance in non-ferrous construction. These small-diameter shell and tube models are pre-engineered from the latest standardized components and are available to meet virtually any OEM or industrial requirement.

Performance notes.

- Suitable for water or other shell side fluids that could cause corrosion in steel shell designs
- Unique hub design allows the maximum number of tubes to be placed within a given shell diameter for maximum heat transfer
- Shell connections are closer to the tubesheet for better tube surface utilization and effective heat transfer
- Domed-shell nozzle design reduces entrance velocity and pressure drop for increased shell flow capability

Features and specifications.

- Non-ferrous, straight tube, fixed tubesheet design
- One, two, or four pass models
- Available from 2 in. through 8 in. in diameter and up to 8 ft. in standard lengths, with longer options for custom designs
- Tubes roller expanded into tubesheets – holes are drilled and reamed
- Removable mounting feet with slotted holes can be reversed or rotated for quick, easy installation
- Precision-cut baffles provide minimum clearances for maximum heat transfer
- NPT (our standard), SAE O-Ring, SAE Flange, or BSPP shell side connections available and can be rotated in 90-degree increments for specialized applications
- Special models with ANSI flanges are available for either shell or tube side connections
- Type AHT and AHTR models are available in all 316 stainless steel construction, in both straight tube fixed tube sheet design and removable U-tube design
- Type HTR models (brass) can be replaced with Type AHTR models (stainless steel)

Product nomenclature.

SIZE	5	Y	14
	Shell diameter	Tube OD	Tube length

TYPE	HT/MHT*	1	A	CI
	Core assembly	Tube pass	Baffle space	Bonnet material

*NOTE: HT is our standard hub product; MHT is our modified hub product.



Applications.

- Water-to-water
- Lube oil cooling
- Hydraulic oil cooling
- Engine jacket water cooling
- Gas cooling

Materials of construction.

- SHELL** 2-8 in. brass
- TUBES** 1/4 in., 3/8 in. and 5/8 in. copper, admiralty, 90/10 copper-nickel
- TUBESHEET** Brass
- BONNETS** Cast iron, cast bronze
- BAFFLES** Brass
- BOLTING** Alloy steel
- GASKETS** Compressed fiber
- BRACKETS** Steel

Standard ratings.

DESIGN PRESSURE

Shell side: 300 psi, 2068 kPa

Tube side: 150 psi, 1034 kPa

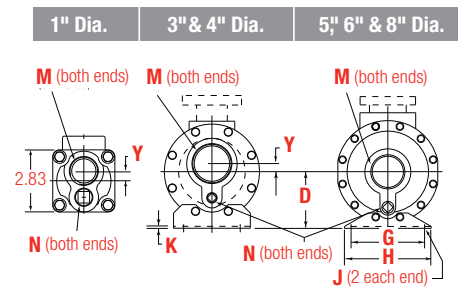
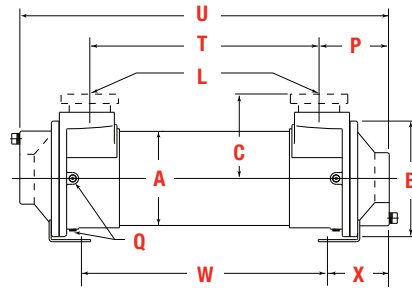
TEST PRESSURE

All units are tested pneumatically

DESIGN TEMPERATURE

300°F, 149°C

Dimensions. ONE PASS



U.S. (in.)

Size	A Dia.	B Dia.	C		D	G	H	J	K	L		M NPT	N NPT	P	Q NPT	T	U	W	X	Y			
			NPT/BSPP SAE O-Ring	SAE 4 Bolt Flange						NPT/BSPP Flange	SAE O-Ring												
2-8	2.12	—	1.69	—	—	—	—	—	—	*1.00	N/A	0.75	—	2.38	—	6.25	11.00	—	—	—			
3-8	3.12	4.19	2.44	C/F	2.44	2.50	3.50	.38 x .88	—	1.00	#16, 1 5/16 - 12 UNF-2B	1.50	—	2.56	(2) .25	6.12	11.25	5.47	3.06	0.38			
3-14	3.12	4.19	2.44																		11.12	18.00	12.88
3-24	3.12	4.19	2.44																		22.12	27.25	21.47
4-14	4.12	5.88	3.12																		21.12	28.00	22.88
4-24	4.12	5.88	3.12	3.50	3.50	4.75	.50 x 1.62	—	1.50	#24, 1 7/8 - 12 UN-2B	2.00	0.38	3.44	(6) .38	11.12	18.50	11.75	2.56	0.50				
4-36	4.12	5.88	3.12																	33.12	40.00	34.88	
5-14	5.12	6.50	3.62	4.34	4.00	5.00	.50 x .88	—	1.50	#24, 1 7/8 - 12 UN-2B	2.50	—	3.69	—	21.12	28.50	21.75	3.38	—				
5-24	5.12	6.50	3.62																	33.12	40.50	33.75	
5-36	5.12	6.50	3.62	4.34	4.00	5.00	.50 x .88	—	1.50	#24, 1 7/8 - 12 UN-2B	2.50	—	3.69	—	20.50	29.00	21.50	—	—				
6-24	6.12	7.50	4.25																	4.84	4.12	5.00	6.00
6-36	6.12	7.50	4.25	4.84	4.12	5.00	6.00	.62 x 1.12	0.19	3.00	—	—	—	6.00	—	19.00	31.00	20.50	5.25	—			
6-48	6.12	7.50	4.25																		44.50	53.00	45.50
6-60	6.12	7.50	4.25	4.84	4.12	5.00	6.00	.62 x 1.12	0.19	3.00	—	—	—	6.00	—	56.50	65.00	57.50	—	—			
8-24	8.00	9.75	5.62																		6.12	5.38	7.00
8-36	8.00	9.75	5.62	6.12	5.38	7.00	8.25	.62 x 1.12	0.19	3.00	—	—	—	6.00	—	43.00	55.00	44.50	5.25	—			
8-48	8.00	9.75	5.62																		55.00	67.00	56.50
8-60	8.00	9.75	5.62	6.12	5.38	7.00	8.25	.62 x 1.12	0.19	3.00	—	—	—	6.00	—	67.00	79.00	68.50	—	—			
8-72	8.00	9.75	5.62																		67.00	79.00	68.50

Metric (mm)

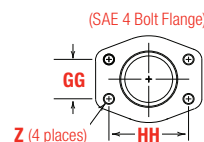
Size	A Dia.	B Dia.	C		D	G	H	J	K	L (in.)		M NPT (in.)	N NPT (in.)	P	Q NPT (in.)	T	U	W	X	Y			
			NPT/BSPP SAE O-Ring	SAE 4 Bolt Flange						NPT/BSPP Flange	SAE O-Ring												
2-8	53.85	—	42.93	—	—	—	—	—	—	*1.00	N/A	0.75	—	60.45	—	158.75	279.40	—	—	—			
3-8	79.25	106.43	61.98	C/F	61.98	63.50	88.90	9.65 x 22.35	—	1.00	#16, 1 5/16 - 12 UNF-2B	1.50	—	65.02	(2) .25	155.45	285.75	138.94	77.72	9.50			
3-14	79.25	106.43	61.98																		11.12	18.00	12.88
3-24	79.25	106.43	61.98																		22.12	27.25	21.47
4-14	104.65	149.35	79.25																		21.12	28.00	22.88
4-24	104.65	149.35	79.25	88.90	88.90	120.65	12.70 x 41.15	—	1.50	#24, 1 7/8 - 12 UN-2B	2.00	0.38	87.38	(6) .38	11.12	18.50	11.75	2.56	0.50				
4-36	104.65	149.35	79.25																	33.12	40.00	34.88	
5-14	130.05	165.10	91.95	110.24	101.60	127.00	.50 x .88	—	1.50	#24, 1 7/8 - 12 UN-2B	2.50	—	93.73	—	21.12	28.50	21.75	3.38	—				
5-24	130.05	165.10	91.95																	33.12	40.50	33.75	
5-36	130.05	165.10	91.95	110.24	101.60	127.00	.50 x .88	—	1.50	#24, 1 7/8 - 12 UN-2B	2.50	—	93.73	—	20.50	29.00	21.50	—	—				
6-24	155.45	190.50	107.95																	122.94	104.65	127.00	152.40
6-36	155.45	190.50	107.95	122.94	104.65	127.00	152.40	.62 x 1.12	4.83	3.00	—	—	—	152.40	—	19.00	31.00	20.50	5.25	—			
6-48	155.45	190.50	107.95																		44.50	53.00	45.50
6-60	155.45	190.50	107.95	122.94	104.65	127.00	152.40	.62 x 1.12	4.83	3.00	—	—	—	152.40	—	56.50	65.00	57.50	—	—			
8-24	203.20	247.65	142.75																		155.45	136.65	177.80
8-36	203.20	247.65	142.75	155.45	136.65	177.80	209.55	15.75 x 28.45	4.83	3.00	—	—	—	152.40	—	43.00	55.00	44.50	5.25	—			
8-48	203.20	247.65	142.75																		55.00	67.00	56.50
8-60	203.20	247.65	142.75	155.45	136.65	177.80	209.55	15.75 x 28.45	4.83	3.00	—	—	—	152.40	—	67.00	79.00	68.50	—	—			
8-72	203.20	247.65	142.75																		67.00	79.00	68.50

Flange Size – U.S. (in.)

Flange Size	GG	HH	Z-CF	Z-CFM
1	1.03	2.06	3/8-16 UNC	M-10
1.5	1.41	2.75	1/2-13 UNC	M-12
2	1.69	3.06		
3	2.44	4.19	5/8-11 UNC	M-16

Flange Size – Metric (mm)

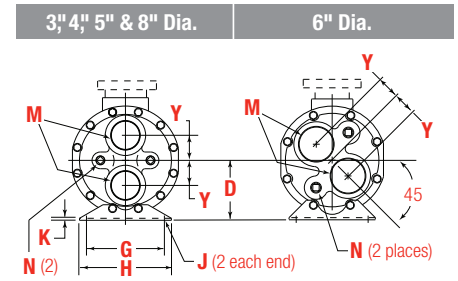
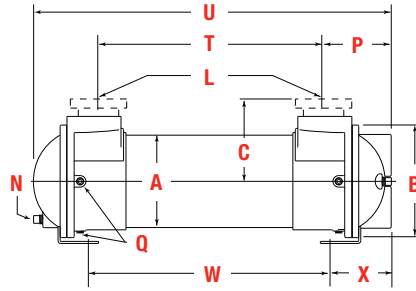
Flange Size	GG	HH	Z-CF	Z-CFM
1	26.16	52.32	3/8-16 UNC	M-10
1.5	35.81	69.85	1/2-13 UNC	M-12
2	42.93	77.72		
3	61.98	106.43	5/8-11 UNC	M-16



*2-8 SAE Flange not available.

NOTE: We reserve the right to make reasonable design changes without notice. Consult factory. U.S. dimensions are inches. Metric dimensions are millimeters (mm), except connection sizes in L, M, N, and Q.

Dimensions. TWO PASS



U.S. (in.)

Size	A Dia.	B Dia.	C		D	G	H	J	K	L		M NPT	N NPT	P	Q NPT	T	U	W	X	Y		
			NPT/BSPP SAE O-Ring	SAE 4 Bolt Flange						NPT/BSPP Flange	SAE O-Ring											
3-8																6.12	10.75	5.47				
3-14	3.12	4.19	2.44	C/F	2.44	2.50	3.50	.38 x .88	0.12	1.00	#16, 1 5/16 - 12 UNF-2B	1.00	0.38	2.44	(2) .25	12.12	16.75	11.47	2.94	1.00		
3-24																		22.12	26.75	21.47		
4-14																		11.12	17.62	12.88		
4-24	4.12	5.88	3.12				3.50	4.75		.50 x 1.62		1.25		#24, 1 7/8 - 12 UN-2B	1.25		3.44	(6) .38	21.12	27.62	22.88	2.56
4-36																	33.12	39.62	34.88			
5-14																	11.12	18.31	11.75			
5-24	5.12	6.50	3.62	4.34		4.00	5.00			1.50		1.50			3.69		21.12	28.31	21.75	3.38	1.50	
5-36																33.12	40.31	33.75				
6-24								.50 x .88								20.50	28.75	21.50				
6-36																32.50	40.75	33.50				
6-48	6.12	7.50	4.25	4.84	4.12	5.00	6.00			2.00	#32, 2 1/2 - 12 UN-2B	2.00		4.25	(6) .25	44.50	52.75	45.50	3.75	1.56		
6-60																	56.50	64.75	57.50			
8-24													0.50				19.00	30.50	20.50			
8-36																	31.00	42.50	32.50			
8-48	8.00	9.75	5.62	6.12	5.38	7.00	8.25	.62 x 1.12	0.19	3.00	—	2.50		6.00		43.00	54.50	44.50	5.25	2.25		
8-60																55.00	66.50	56.50				
8-72																67.00	78.50	68.50				

Metric (mm)

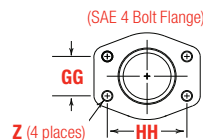
Size	A Dia.	B Dia.	C		D	G	H	J	K	L (in.)		M NPT (in.)	N NPT (in.)	P	Q NPT (in.)	T	U	W	X	Y			
			NPT/BSPP SAE O-Ring	SAE 4 Bolt Flange						NPT/BSPP Flange	SAE O-Ring												
3-8																155.45	273.05	138.94					
3-14	79.25	106.43	61.98	C/F	61.98	63.50	88.90	9.65 x 22.35	3.05	1.00	#16, 1 5/16 - 12 UNF-2B	1.00	0.38	61.98	(2) .25	307.85	425.45	291.34	74.68	25.40			
3-24																			561.85	679.45	545.34		
4-14																			282.45	447.55	327.15		
4-24	104.65	149.35	79.25				88.90	120.65		12.70 x 41.15		1.25		#24, 1 7/8 - 12 UN-2B	1.25		87.38	(6) .38	536.45	701.55	581.15	65.02	30.23
4-36																	841.25	1006.35	885.95				
5-14																	282.45	465.07	298.45				
5-24	130.05	165.10	91.95	110.24		101.60	127.00			1.50		1.50			93.73		536.45	719.07	552.45	85.85	38.10		
5-36																841.25	1023.87	857.25					
6-24								12.70 x 22.35								520.70	730.25	546.10					
6-36																825.50	1035.05	850.90					
6-48	155.45	190.50	107.95	122.94	104.65	127.00	152.40			2.00	#32, 2 1/2 - 12 UN-2B	2.00		107.95	(6) .25	1130.30	1339.85	1155.70	95.25	39.62			
6-60																	1435.10	1644.65	1460.50				
8-24													0.50				482.60	774.70	520.70				
8-36																	787.40	1079.50	825.50				
8-48	203.20	247.65	142.75	155.45	136.65	177.80	209.55	15.75 x 28.45	4.83	3.00	—	2.50		152.40		1092.20	1384.30	1130.30	133.35	57.15			
8-60																1397.00	1689.10	1435.10					
8-72																1701.80	1993.90	1739.90					

Flange Size – U.S. (in.)

Flange Size	GG	HH	Z-CF	Z-CFM
1	1.03	2.06	3/8-16 UNC	M-10
1.5	1.41	2.75	1/2-13 UNC	M-12
2	1.69	3.06	5/8-11 UNC	M-16
3	2.44	4.19	5/8-11 UNC	M-16

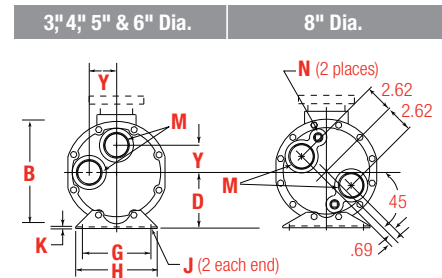
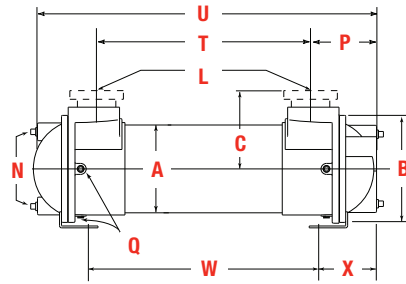
Flange Size – Metric (mm)

Flange Size	GG	HH	Z-CF	Z-CFM
1	26.16	52.32	3/8-16 UNC	M-10
1.5	35.81	69.85	1/2-13 UNC	M-12
2	42.93	77.72	5/8-11 UNC	M-16
3	61.98	106.43	5/8-11 UNC	M-16



NOTE: We reserve the right to make reasonable design changes without notice. Consult factory. U.S. dimensions are inches. Metric dimensions are millimeters (mm), except connection sizes in L, M, N, and Q.

Dimensions. FOUR PASS



For the orientation of all 8 in. diameter 4-pass units with 1/4 in. tubes, please contact factory.

U.S. (in.)

Size	A Dia.	B Dia.	C		D	G	H	J	K	L		M NPT	N NPT	P	Q NPT	T	U	W	X	Y					
			NPT/BSPP SAE O-Ring	SAE 4 Bolt Flange						NPT/BSPP Flange	SAE O-Ring														
3-8																									
3-14	3.12	4.19	2.44	C/F	2.44	2.50	3.50	.38 x .88	0.12	1.00	#16, 1 5/16 - 12 UNF-2B	0.75	0.38	2.31	(2) .25	6.12	10.88	5.47							
3-24																									
4-14																									
4-24	4.12	5.88	3.12				3.50	4.75		.50 x 1.62								3.44	(6) .38	11.12	17.62	12.88			
4-36										1.50	#24, 1 7/8 - 12 UN-2B					21.12	27.62	22.88	2.56	1.06					
5-14																11.12	18.38	11.75							
5-24	5.12	6.50	3.62	4.34		4.00	5.00					1.00		3.56		21.12	28.38	21.75	3.25	1.69					
5-36																33.12	40.38	33.75							
6-24								.50 x .88								20.50	29.00	21.50							
6-36	6.12	7.50	4.25	4.84	4.12	5.00	6.00			2.00	#32, 2 1/2 - 12 UN-2B	1.50		4.25		32.50	41.00	33.50	3.75	2.00					
6-48															(6) .25	44.50	53.00	45.50							
6-60																56.50	65.00	57.50							
8-24													0.50			19.00	30.75	20.50							
8-36																31.00	42.75	32.50							
8-48	8.00	9.75	5.62	6.12	5.38	7.00	8.25	.62 x 1.12	0.19	3.00	—	2.00		6.00		43.00	54.75	44.50	5.25	—					
8-60																55.00	66.75	56.50							
8-72																67.00	78.75	68.50							

Metric (mm)

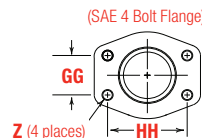
Size	A Dia.	B Dia.	C		D	G	H	J	K	L (in.)		M NPT (in.)	N NPT (in.)	P	Q NPT (in.)	T	U	W	X	Y					
			NPT/BSPP SAE O-Ring	SAE 4 Bolt Flange						NPT/BSPP Flange	SAE O-Ring														
3-8																									
3-14	79.25	106.43	61.98	C/F	61.98	63.50	88.90	9.65 x 22.35	3.05	1.00	#16, 1 5/16 - 12 UNF-2B	0.75	0.38	58.67	(2) .25	155.45	276.35	138.94							
3-24																									
4-14																									
4-24	104.65	149.35	79.25				88.90	120.65		12.70 x 41.15								87.38	(6) .38	536.45	701.55	581.15	65.02	26.92	
4-36										1.50	#24, 1 7/8 - 12 UN-2B					841.25	1006.35	885.95							
5-14																282.45	466.85	298.45							
5-24	130.05	165.10	91.95	110.24		101.60	127.00					1.00		90.42		536.45	720.85	552.45	82.55	42.93					
5-36																841.25	1025.65	857.25							
6-24								12.70 x 22.35								520.70	736.60	546.10							
6-36	155.45	190.50	107.95	122.94	104.65	127.00	152.40			2.00	#32, 2 1/2 - 12 UN-2B	1.50		107.95		825.50	1041.40	850.90	95.25	50.80					
6-48															(6) .25	1130.30	1346.20	1155.70							
6-60																1435.10	1651.00	1460.50							
8-24													0.50			482.60	781.05	520.70							
8-36																787.40	1085.85	825.50							
8-48	203.20	247.65	142.75	155.45	136.65	177.80	209.55	15.75 x 28.45	4.83	3.00	—	2.00		152.40		1092.20	1390.65	1130.30	133.35	—					
8-60																1397.00	1695.45	1435.10							
8-72																1701.80	2000.25	1739.90							

Flange Size – U.S. (in.)

Flange Size	GG	HH	Z-CF	Z-CFM
1	1.03	2.06	3/8-16 UNC	M-10
1.5	1.41	2.75	1/2-13 UNC	M-12
2	1.69	3.06		
3	2.44	4.19	5/8-11 UNC	M-16

Flange Size – Metric (mm)

Flange Size	GG	HH	Z-CF	Z-CFM
1	26.16	52.32	3/8-16 UNC	M-10
1.5	35.81	69.85	1/2-13 UNC	M-12
2	42.93	77.72		
3	61.98	106.43	5/8-11 UNC	M-16



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