

CA R-454B Model Series

Commercial Water Source Heat Pumps

Engineering
Submittal
Sheet



Overview and Certifications



- ▶ ¾ to 1.5 Ton Capacities
- ▶ Single Stage Compressor with Slim Cabinet
- ▶ Rotary Compressors
- ▶ Option Rich Features and Components
- ▶ Low GWP Ready (R-454B Refrigerant)

Commercial WSHP Product Portfolio

Product		Water-to-Air						Water-to-Water	
		CP	CP Splits	CF	CL	CA	EC	MC	WT
Price		\$\$\$	\$\$\$	\$\$	\$	\$	\$\$	\$\$	\$\$
Model Sizes <6 Ton	007			X	X				
	009			X	X	X			
	012			X	X	X			
	015			X	X	X			
	018			X	X	X			
	024	X	X	X	X				
	025								X
	030			X	X				
	035								X
	036	X	X	X	X				
	041								
	042			X	X				
	048	X	X	X	X				
	049								X
	060	X	X	X	X				X
Model Sizes >6 Ton	070	X		X	X				X
	071								
	072						X		
	096						X		
	120						X		X
	122								X
	150						X		
	151						X		
	180						X		X
	181						X		
	210						X		X
	240						X		X
	300						X		
	360						X	X	X
	420								X
	480							X	
	600							X	
	720							X	

☒ Featured model

Bosch Thermotechnology Corp.
Londonderry, NH • Watertown, MA • Ft. Lauderdale, FL

[illegible]

CA R-454B Model Series - Commercial Water Source Heat Pumps

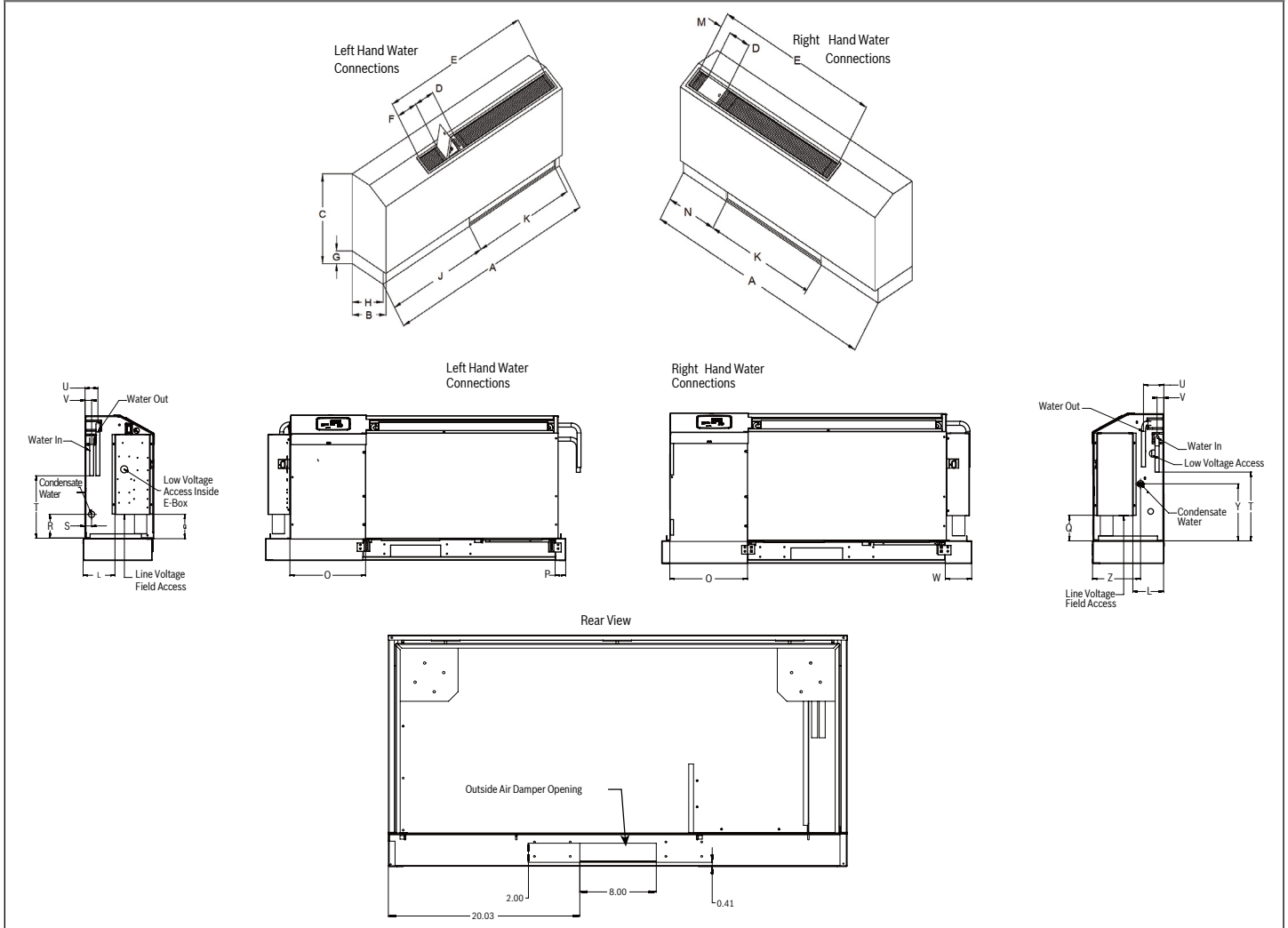


AHRI Ratings (13256-1)														
Model Number	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump				CFM	GPM
	Cooling 86 deg.F		Heating 68 deg.F		Cooling 59 deg.F		Heating 50 deg.F		Cooling 77 deg.F		Heating 32 deg.F			
	Capacity BTU/h	EER BTU/W-h	Capacity BTU/h	COP	Capacity BTU/h	EER BTU/W-h	Capacity BTU/h	COP	Capacity BTU/h	EER BTU/W-h	Capacity BTU/h	COP		
009	8,350	14.45	9,950	5.30	9,500	22.35	8,150	4.45	8,850	16.95	6,300	3.60	315 Cool 345 Htg	2.00
012	11,350	14.50	14,150	4.90	12,650	21.05	11,750	4.20	11,800	16.65	9,100	3.50	460 Cool 500 Htg	3.00
015	13,650	14.35	16,500	4.90	15,250	19.85	13,800	4.20	14,350	16.65	10,500	3.40	440 Cool 480 Htg	4.00
018	16,950	13.00	22,450	4.55	18,450	17.55	18,700	4.00	17,550	14.50	15,000	3.45	460 Cool 500 Htg	4.50

CA R-454B Model Series - Commercial Water Source Heat Pumps



Unit Configurations, Dimensions, and Connections



Standard Length Unit Dimensions

Model Number	A	B	C	D	E	F	G	H	J		K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Condenser Water Connections	Permanent Washable Filter Size	
	Width, Standard Length	Width, Extended Length	Depth	Height	Control Door Width	Discharge Grille Width	Grille Edge to Door, Left Hand	Clearance to Unit Bottom	Sub-Base Depth	Cabinet End to Return Air, Standard Length, Left Hand	Cabinet End to Return Air, Extended Length, Left Hand	Return Air Width	Electrical Box to Chassis	Grille Edge to Door, Right Hand	Cabinet End to Return Air, Right Hand	Control Panel Width	Return Air to Chassis End, Left Hand	Electrical Box Height from Sub-base	Condensate Height from Sub-base, Left Hand	Condensate Depth from Rear, Left Hand	Water Connection Height from Sub-base	Water Out Depth from Rear	Water In Depth from Rear	Return Air to Chassis End, Right Hand	Electrical Box Height from Sub-base, Right Hand	Condensate Height from Sub-base, Right Hand			Condensate Depth from Front, Right Hand
009	48.00	63.00	12.00	23.88	6.00	45.00	6.12	3.37	11.00	12.87	30.87	30.75	5.09	2.87	12.87	12.00	1.69	3.87	3.75	1.00	10.00	2.00	1.00	4.00	15.00	8.69	7.31	5/8" tube	30.12 x 7 x 0.37
012	48.00	63.00	12.00	23.88	6.00	45.00	6.12	3.37	11.00	12.87	30.87	30.75	5.09	2.87	12.87	12.00	1.69	3.87	3.75	1.00	10.00	2.00	1.00	4.00	15.00	8.69	7.31	5/8" tube	30.12 x 7 x 0.37
015	48.00	63.00	12.00	23.88	6.00	45.00	6.12	3.37	11.00	12.87	30.87	30.75	5.09	2.87	12.87	12.00	1.69	3.87	3.75	1.00	10.00	2.00	1.00	4.00	15.00	8.69	7.31	5/8" tube	30.12 x 7 x 0.37
018	48.00	63.00	12.00	23.88	6.00	45.00	6.12	3.37	11.00	12.87	30.87	30.75	5.09	2.87	12.87	12.00	1.69	3.87	3.75	1.00	10.00	2.00	1.00	4.00	15.00	8.69	7.31	5/8" tube	30.12 x 7 x 0.37

All dimensions in inches unless otherwise noted. All dimensions within +0.125". Specifications subject to change without notice.

Outside air damper in sub-base rear.

Caution! When installing unit in cold climates, an outside air damper must be provided to prevent possible condenser freeze-up.

CA R-454B Model Series - Commercial Water Source Heat Pumps



Operating Limits				
Fluid Type	Limit		Cooling	Heating
Air	Minimum ambient air		50°F	40°F
	Maximum ambient air		100°F	85°F
	Rated ambient air		80°F	68°F
	Minimum Air coil entering air db/wb		65/57°F	45°F
	Maximum Air Coil entering air db/wb		95/85°F	80°F
	Rated Air coil entering air db/wb		80/67°F	68/59°F
Liquid	Antifreeze Protection Required LWT / EWT		-	< 40°/ < 50°F
	Minimum water coil entering fluid		50°F	EXT 20°F*
	Maximum water coil entering fluid		110°F	80°F
	Rated water coil entering fluid	Water Loop application	86°F	68°F
		Ground Loop application	77°F	32°F
		Ground Water application	59°F	50°F
	Maximum operating water pressure	Standard unit	450psi/3,102kPA	
	Minimum operating water flow rate		1.5 GPM per ton	

* Antifreeze solution is required at these fluid temperatures.

CA R-454B Model Series - Commercial Water Source Heat Pumps



Antifreeze Correction							
Antifreeze Type	Antifreeze % Volume	Cooling			Heating		WPD Correction Factor EWT 30 °F
		EWT 90 °F			EWT 30 °F		
		Total Cap.	Sens. Cap	Power	Htg. Cap	Power	
Water	0	1.000	1.000	1.000	1.000	1.000	1.000
Propylene Glycol	5	0.998	0.998	1.004	0.995	0.999	1.085
	10	0.996	0.995	1.008	0.989	0.997	1.165
	15	0.994	0.992	1.012	0.980	0.995	1.257
	25	0.989	0.983	1.023	0.962	0.990	1.491
	35	0.981	0.972	1.040	0.938	0.984	1.812
	40	0.976	0.965	1.050	0.923	0.981	2.012
	45	0.970	0.956	1.062	0.907	0.977	2.240
	50	0.964	0.948	1.076	0.890	0.972	2.502
Methanol	5	0.997	0.997	1.003	0.990	0.997	1.060
	10	0.996	0.996	1.005	0.979	0.993	1.100
	15	0.994	0.994	1.008	0.970	0.990	1.140
Ethanol	5	0.998	0.998	1.002	0.981	0.994	1.160
	10	0.996	0.996	1.004	0.960	0.988	1.230
	15	0.992	0.992	1.006	0.944	0.983	1.280
	25	0.986	0.986	1.009	0.917	0.974	1.400
Ethylene Glycol	5	0.999	0.999	1.002	0.997	0.999	1.035
	10	0.998	0.996	1.005	0.993	0.998	1.086
	15	0.996	0.994	1.009	0.986	0.996	1.145
	25	0.992	0.988	1.018	0.974	0.993	1.278
	30	0.989	0.984	1.023	0.967	0.992	1.354
	35	0.986	0.979	1.029	0.960	0.990	1.436
	40	0.983	0.974	1.036	0.953	0.988	1.528
	45	0.979	0.969	1.044	0.944	0.986	1.629
	50	0.975	0.962	1.053	0.934	0.983	1.743

CA R-454B Model Series - Commercial Water Source Heat Pumps



Waterside Pressure Drop		
Model Number	Water Flow Rate (GPM)	Water Side Pressure Drop (PSI)
009	1.12	0.7
	1.68	1.4
	2.25	2.4
	3.00	3.9
012	1.50	0.9
	2.25	1.8
	3.00	2.9
	4.00	4.7
015	1.87	1.3
	2.81	2.5
	3.75	4.1
	5.00	6.8
018	2.25	1.7
	3.37	3.3
	4.50	5.5
	6.00	9.0

- All values based upon pure water at EWT 70°F

CA R-454B Model Series - Commercial Water Source Heat Pumps



Electrical Data - PSC Blower Motor

Model Number	Voltage Code	Voltage/ Hz/ Phase	Voltage Min/ Max	Compressor			Blower Motor		Total Unit FLA	Single Point Power			Compressor Service		
				QTY	RLA	LRA	FLA	HP		Min. Circuit Amps	MOP CALC	MOP	Cold Winding Resistance (Ω)		Run Capacitor (μF/V)
													Single Phase: R-C	Single Phase: S-C	
009	1	208-230/1/60	197/253	1	3.2	22.2	0.9	0.10	4.1	4.9	8.1	15	2.95	7.35	15/370
	2	265-277/1/60	239/291	1	2.6	18.8	0.7	0.10	3.3	4.0	6.6	15	4.27	10.74	10/440
012	1	208-230/1/60	197/253	1	4.4	27.9	0.8	0.25	5.2	6.3	10.7	15	2.32	5.93	20/370
	2	265-277/1/60	239/291	1	3.5	22.2	0.8	0.25	4.3	5.2	8.7	15	3.47	8.69	15/440
015	1	208-230/1/60	197/253	1	5.2	29.0	0.8	0.25	6.0	7.3	12.5	15	2.31	5.45	25/450
	2	265-277/1/60	239/291	1	4.2	20.0	0.8	0.25	5.0	6.1	10.3	15	3.58	7.39	15/440
018	1	208-230/1/60	197/253	1	7.3	39.0	0.8	0.25	8.1	9.9	17.2	15	1.97	1.42	50/440
	2	265-277/1/60	239/291	1	5.8	31.0	0.8	0.25	6.6	8.1	13.9	15	2.54	1.87	30/440

Blower Performance CFM - PSC Motor

Model Number	Motor Speed	Factory setting	CFM @ 0.0 in.w.c*	
			Cooling	Heating
009	High		320	350
	Low	X	315	345
012	High		480	510
	Low	X	460	490
015	High		460	500
	Low	X	440	480
018	High	X	460	500
	Low		440	480

*Ductless system; only rated at an external static pressure of 0.00 inches of water column

CA R-454B Model Series - Commercial Water Source Heat Pumps



Physical Data					
Size Tonnage	Units	009	012	015	018
Compressor Type	qty 1	Rotary	Rotary	Rotary	Rotary
Max Water Working Pressure	psig/kPa	450/3102	450/3102	450/3102	450/3102
Fan Motor & Blower					
PSC Fan Motor	hp	0.1	0.25	0.25	0.25
PSC Fan Motor Speeds	—	2	2	2	2
Blower Wheel Size (Dia. x W)	in	5.5 x 8 (2)	5.5 x 8 (2)	5.5 x 8 (2)	5.5 x 8 (2)
Water Connection					
Type	—	Tube / FPT Option	Tube / FPT Option	Tube / FPT Option	Tube / FPT Option
Size	in	5/8" / 1/2"	5/8" / 1/2"	5/8" / 1/2"	5/8" / 1/2"
Coaxial Coil Volume	gal	0.08	0.11	0.11	0.11
Cabinet					
Refrigeration Charge	oz	21.5	23	26	24.5
Air Coil Dimensions (H x L)	in	10x27	10x27	10x27	10x27
Standard Filter - 1/2" Washable Aluminum (H x L x D)	in	7x31-1/4x3/8	7x31-1/4x3/8	7x31-1/4x3/8	7x31-1/4x3/8
Weight - Operating	lbs	131	138	144	144
Weight - Shipping	lbs	151	158	164	164

CA R-454B Model Series - Commercial Water Source Heat Pumps



Capacity Data CA009 (315 CFM)

Cooling									Heating							
Entering Water Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp DB/WB (°F)	Total Capacity (MBTUH)	Sensible Capacity (MBTUH)	Heat of Rejection (MBTUH)	Power (kW)	EER	Entering Fluid Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp (°F)	Total Capacity (MBTUH)	Heat of Absorption (MBTUH)	Power Input (kW)	COP
50	1.1	0.7	75/63	8.8	7.2	10.2	0.4	20.5	30	1.1	1.0	Operation Not Recommended				
			80/67	9.4	7.5	10.8	0.4	22.0				60	5.2	4.0	0.4	3.40
			85/71	10.0	7.7	11.4	0.4	23.7				70	4.9	3.6	0.5	3.03
	1.6	1.5	75/63	9.1	7.3	10.4	0.4	23.3		1.6	2.0	60	4.6	3.3	0.5	2.7
			80/67	9.7	7.6	11.0	0.4	25.3				70	5.8	4.6	0.5	3.68
			85/71	10.4	7.8	11.6	0.4	27.7				80	5.6	4.2	0.5	3.30
	2.2	2.5	75/63	9.2	7.4	10.5	0.4	24.9		2.2	3.2	60	5.3	3.9	0.5	2.96
			80/67	9.9	7.6	11.1	0.4	27.4				70	6.1	4.5	0.5	3.25
			85/71	10.5	7.9	11.7	0.3	30.2				80	6.5	5.2	0.5	4.01
60	1.1	0.7	75/63	8.4	7.0	10.0	0.5	17.3	40	1.1	1.0	Operation Not Recommended				
			80/67	9.0	7.3	10.6	0.5	18.5				60	5.6	4.3	0.5	3.55
			85/71	9.5	7.6	11.2	0.5	19.8				70	5.3	4.0	0.5	3.19
	1.6	1.4	75/63	8.7	7.2	10.1	0.4	19.3		1.6	1.9	60	5.1	3.7	0.5	2.9
			80/67	9.3	7.4	10.7	0.4	20.9				70	6.3	4.9	0.5	3.61
			85/71	9.9	7.7	11.4	0.4	22.6				80	6.1	4.5	0.5	3.25
	2.2	2.4	75/63	8.8	7.2	10.2	0.4	20.4		2.2	3.0	60	6.5	5.2	0.5	4.01
			80/67	9.4	7.5	10.8	0.4	22.3				70	6.3	4.9	0.5	3.61
			85/71	10.1	7.7	11.5	0.4	24.3				80	6.1	4.5	0.5	3.25
70	1.1	0.7	75/63	8.0	6.9	9.7	0.5	14.8	50	1.1	0.9	Operation Not Recommended				
			80/67	8.5	7.1	10.3	0.5	15.8				60	6.1	4.8	0.5	3.78
			85/71	9.1	7.4	10.9	0.5	16.8				70	5.9	4.5	0.5	3.42
	1.6	1.4	75/63	8.2	7.0	9.9	0.5	16.3		1.6	1.8	60	5.7	4.2	0.5	3.10
			80/67	8.8	7.2	10.5	0.5	17.5				70	7.3	6.0	0.5	4.42
			85/71	9.4	7.5	11.1	0.5	18.9				80	7.1	5.6	0.5	3.97
	2.2	2.3	75/63	8.4	7.0	10.0	0.5	17.1		2.2	2.9	60	6.9	5.3	0.6	3.58
			80/67	9.0	7.3	10.6	0.5	18.5				70	7.1	5.6	0.5	3.97
			85/71	9.6	7.6	11.2	0.5	20.1				80	6.9	5.3	0.6	3.58
80	1.1	0.7	75/63	7.6	6.7	9.5	0.6	12.7	60	1.1	0.9	60	5.0	3.8	0.4	3.36
			80/67	8.1	7.0	10.0	0.6	13.5				70	4.8	3.5	0.5	2.99
			85/71	8.6	7.2	10.6	0.6	14.3				80	4.7	3.3	0.5	2.70
	1.6	1.3	75/63	7.8	6.8	9.6	0.6	13.9		1.6	1.7	60	6.7	5.4	0.5	4.10
			80/67	8.4	7.1	10.2	0.6	14.9				70	6.5	5.1	0.5	3.71
			85/71	9.0	7.3	10.8	0.6	15.9				80	6.4	4.8	0.6	3.38
	2.2	2.2	75/63	7.9	6.9	9.7	0.5	14.5		2.2	2.7	60	8.2	6.8	0.5	4.88
			80/67	8.5	7.1	10.3	0.5	15.6				70	8.0	6.5	0.5	4.37
			85/71	9.1	7.4	10.9	0.5	16.8				80	7.8	6.2	0.6	3.94
90	1.1	0.6	75/63	7.2	6.6	9.2	0.7	10.9	70	1.1	0.8	60	5.2	4.0	0.4	3.41
			80/67	7.7	6.8	9.8	0.7	11.6				70	5.1	3.8	0.5	3.08
			85/71	8.2	7.1	10.3	0.7	12.2				80	5.0	3.6	0.5	2.81
	1.6	1.3	75/63	7.4	6.7	9.4	0.6	11.9		1.6	1.6	60	7.4	6.1	0.5	4.47
			80/67	7.9	6.9	9.9	0.6	12.7				70	7.3	5.8	0.5	4.04
			85/71	8.5	7.1	10.5	0.6	13.5				80	7.1	5.5	0.6	3.67
	2.2	2.2	75/63	7.5	6.7	9.4	0.6	12.4		2.2	2.6	60	9.2	7.8	0.5	5.37
			80/67	8.1	7.0	10.0	0.6	13.3				70	9.0	7.4	0.5	4.80
			85/71	8.6	7.2	10.6	0.6	14.2				80	8.8	7.1	0.6	4.31
100	1.1	0.6	75/63	6.7	6.4	9.0	0.7	9.4	80	1.1	0.8	60	5.5	4.2	0.5	3.51
			80/67	7.2	6.7	9.5	0.7	9.9				70	5.4	4.1	0.5	3.21
			85/71	7.7	6.9	10.1	0.7	10.4				80	5.3	3.9	0.5	2.94
	1.6	1.3	75/63	7.0	6.5	9.1	0.7	10.1		1.6	1.6	60	8.2	6.8	0.5	4.86
			80/67	7.5	6.8	9.7	0.7	10.8				70	8.1	6.5	0.5	4.39
			85/71	8.0	7.0	10.2	0.7	11.5				80	7.9	6.3	0.6	3.98
	2.2	2.1	75/63	7.1	6.5	9.2	0.7	10.5		2.2	2.5	60	10.3	8.8	0.5	5.89
			80/67	7.6	6.8	9.7	0.7	11.2				70	10.0	8.4	0.6	5.24
			85/71	8.1	7.0	10.3	0.7	12.0				80	9.8	8.1	0.6	4.68
110	1.1	0.6	75/63	6.3	6.2	8.8	0.8	8.0	90	1.1	0.8	60	5.8	4.5	0.5	3.7
			80/67	6.7	6.6	9.3	0.8	8.4				70	5.7	4.4	0.5	3.4
			85/71	7.2	6.8	9.8	0.8	8.8				80	5.6	4.2	0.5	3.1
	1.6	1.2	75/63	6.5	6.3	8.9	0.8	8.6		1.6	1.5	60	9.0	7.6	0.5	5.3
			80/67	7.0	6.6	9.4	0.8	9.1				70	8.9	7.3	0.5	4.8
			85/71	7.5	6.9	9.9	0.8	9.7				80	8.8	7.1	0.6	4.3
	2.2	2.0	75/63	6.6	6.3	8.9	0.7	8.9		2.2	2.4	60	11.3	9.9	0.5	6.4
			80/67	7.1	6.7	9.5	0.7	9.5				70	11.1	9.5	0.6	5.7
			85/71	7.6	6.9	10.0	0.8	10.1				80	10.9	9.0	0.6	5.1

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the BST selection software.

Ratings below 40°F are with a methanol solution.

DISCLAIMER: The performance reported herein is based on testing by FHP. Variations in the installation and operational environment may alter performance. Bosch disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. In addition, continuous research and development may result in a change to an appliances design and specifications at the time of order, which Bosch may change without notice. Before purchase, confirm the design specifications of the appliance.

CA R-454B Model Series - Commercial Water Source Heat Pumps



Capacity Data CA012 (475 CFM)

Cooling									Heating									
Entering Water Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp DB/WB (°F)	Total Capacity (MBTUH)	Sensible Capacity (MBTUH)	Heat of Rejection (MBTUH)	Power (kW)	EER	Entering Fluid Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp (°F)	Total Capacity (MBTUH)	Heat of Absorption (MBTUH)	Power Input (kW)	COP		
50	1.5	0.9	75/63	11.5	10.0	13.6	0.6	19.1	30	1.5	1.2	Operation Not Recommended						
			80/67	12.3	10.4	14.3	0.6	20.5				60	7.8	5.7	0.7	3.31		
			85/71	13.1	10.8	15.1	0.6	22.0					7.5	5.4	0.7	3.03		
	2.2	1.9	75/63	11.9	10.2	13.7	0.6	21.4		80	7.4		5.1	0.8	2.8			
			80/67	12.7	10.5	14.5	0.5	23.2		60	8.4		6.4	0.7	3.52			
			85/71	13.5	10.9	15.3	0.5	25.3		70	8.2		6.0	0.7	3.22			
	3.0	3.0	75/63	12.0	10.3	13.8	0.5	22.7		3.0	3.6		80	8.0	5.7	0.8	2.96	
			80/67	12.9	10.6	14.6	0.5	24.9					40	1.5	1.1	Operation Not Recommended		
			85/71	13.7	11.0	15.5	0.5	27.4								60	8.6	6.6
1.5	0.9	75/63	11.1	9.9	13.3	0.7	16.4	70	8.5	6.2	0.8	3.29						
		80/67	11.8	10.3	14.0	0.7	17.5	80	8.3	5.9	0.8	3.0						
		85/71	12.5	10.6	14.8	0.7	18.7	60	9.5	7.4	0.7	3.86						
60	2.2	1.8	75/63	11.4	10.0	13.5	0.6	18.2	50	2.2	2.1	70		9.3	7.0	0.8	3.54	
			80/67	12.1	10.4	14.2	0.6	19.6				80		9.1	6.7	0.8	3.24	
			85/71	12.9	10.8	15.0	0.6	21.2				60		6.8	4.9	0.7	3.03	
	3.0	2.9	75/63	11.5	10.1	13.6	0.6	19.2		3.0	3.3	70	6.5	4.6	0.7	2.77		
			80/67	12.3	10.5	14.3	0.6	20.8				80	6.3	4.3	0.7	2.54		
			85/71	13.2	10.8	15.1	0.6	22.7				60	9.7	7.5	0.7	3.90		
	70	1.5	0.8	75/63	10.6	9.7	13.0	0.7		14.2	60	1.5	1.0	70	9.5	7.2	0.8	3.58
				80/67	11.3	10.1	13.7	0.7		15.1				80	9.4	6.9	0.8	3.30
				85/71	12.0	10.4	14.5	0.7		16.1				60	10.7	8.5	0.7	4.23
2.2		1.7	75/63	10.9	9.8	13.2	0.7	15.6	2.2	2.0		70	10.5	8.1	0.8	3.86		
			80/67	11.6	10.2	13.9	0.7	16.7				80	10.3	7.8	0.9	3.53		
			85/71	12.4	10.5	14.7	0.7	18.0				60	7.2	5.2	0.7	3.14		
80		3.0	2.7	75/63	11.1	9.9	13.3	0.7	16.4	70		3.0	3.1	70	7.0	5.0	0.7	2.89
				80/67	11.8	10.3	14.0	0.7	17.7					80	6.9	4.7	0.8	2.67
				85/71	12.6	10.6	14.8	0.7	19.1					60	10.8	8.6	0.7	4.26
	1.5	0.8	75/63	10.1	9.5	12.8	0.8	12.4	1.5		1.0	70	10.7	8.3	0.8	3.90		
			80/67	10.8	9.8	13.5	0.8	13.1				80	10.5	7.9	0.9	3.57		
			85/71	11.5	10.2	14.2	0.8	13.9				60	12.1	9.8	0.8	4.64		
	90	2.2	1.6	75/63	10.4	9.6	12.9	0.8	13.5		2.2	1.8	70	11.9	9.4	0.8	4.22	
				80/67	11.1	10.0	13.7	0.8	14.4				80	11.7	9.0	0.9	3.84	
				85/71	11.8	10.4	14.4	0.8	15.4				60	7.7	5.7	0.7	3.30	
3.0		2.6	75/63	10.6	9.7	13.0	0.7	14.1	3.0	3.0	70	7.6	5.5	0.7	3.06			
			80/67	11.3	10.1	13.7	0.7	15.1			80	7.6	5.3	0.8	2.85			
			85/71	12.0	10.4	14.5	0.7	16.3			60	12.0	9.8	0.8	4.63			
100		1.5	0.7	75/63	9.6	9.3	12.5	0.9	10.8	80	1.5	0.9	70	11.9	9.4	0.8	4.22	
				80/67	10.3	9.7	13.2	0.9	11.4				80	11.7	9.0	0.9	3.86	
				85/71	10.9	10.1	13.9	0.9	12.0				60	13.5	11.1	0.8	5.07	
	2.2	1.5	75/63	9.9	9.4	12.7	0.8	11.7	2.2		1.7	70	13.3	10.7	0.8	4.61		
			80/67	10.6	9.8	13.4	0.8	12.5				80	13.1	10.3	0.9	4.20		
			85/71	11.3	10.1	14.1	0.9	13.3				60	8.4	6.3	0.7	3.50		
	110	3.0	2.4	75/63	10.1	9.4	12.8	0.8	12.2		3.0	2.8	70	8.3	6.1	0.7	3.26	
				80/67	10.8	9.8	13.5	0.8	13.0				80	8.3	5.9	0.8	3.03	
				85/71	11.5	10.2	14.2	0.8	13.9				60	13.3	11.0	0.8	5.02	
120		1.5	0.7	75/63	9.1	9.1	12.3	1.0	9.4	90	1.5	0.8	70	13.2	10.6	0.8	4.58	
				80/67	9.7	9.5	12.9	1.0	9.9				80	13.0	10.2	0.9	4.19	
				85/71	10.4	9.8	13.6	1.0	10.5				60	15.0	12.6	0.8	5.56	
		2.2	1.4	75/63	9.4	9.2	12.4	0.9	10.2		2.2	1.6	70	14.7	12.1	0.9	5.03	
				80/67	10.0	9.6	13.1	0.9	10.8				80	14.5	11.9	0.9	4.57	
				85/71	10.7	10.0	13.8	0.9	11.4				60	9.1	7.0	0.7	3.7	
	3.0	2.3	75/63	9.5	9.3	12.5	0.9	10.6	3.0		2.7	70	9.1	6.8	0.8	3.5		
			80/67	10.2	9.7	13.2	0.9	11.3				80	9.1	6.6	0.8	3.2		
			85/71	10.9	10.1	13.9	0.9	12.0				60	14.6	12.2	0.8	5.5		
130	1.5	0.7	75/63	8.7	8.7	12.2	1.1	8.3	100	1.5	1.6	70	14.3	11.5	0.9	4.5		
			80/67	9.2	9.2	12.7	1.1	8.7				80	14.3	11.5	0.9	4.5		
			85/71	9.7	9.7	13.3	1.1	9.0				60	16.4	14.0	0.8	6.1		
	2.2	1.4	75/63	8.9	8.9	12.2	1.0	8.9		2.2	2.5	70	16.2	13.6	0.9	5.5		
			80/67	9.5	9.4	12.8	1.0	9.3				80	16.0	13.1	0.9	5.0		
			85/71	10.1	9.8	13.5	1.0	9.9				60	16.4	14.0	0.8	6.1		
	3.0	2.2	75/63	9.0	9.0	12.2	1.0	9.2		3.0	2.5	70	16.2	13.6	0.9	5.5		
			80/67	9.6	9.5	12.9	1.0	9.7				80	16.0	13.1	0.9	5.0		
			85/71	10.3	9.8	13.6	1.0	10.3				60	16.4	14.0	0.8	6.1		

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the BST selection software.

Ratings below 40°F are with a methanol solution.

DISCLAIMER: The performance reported herein is based on testing by FHP. Variations in the installation and operational environment may alter performance. Bosch disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. In addition, continuous research and development may result in a change to an appliances design and specifications at the time of order, which Bosch may change without notice. Before purchase, confirm the design specifications of the appliance.

CA R-454B Model Series - Commercial Water Source Heat Pumps



Capacity Data CA015 (450 CFM)

Cooling									Heating							
Entering Water Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp DB/WB (°F)	Total Capacity (MBTUH)	Sensible Capacity (MBTUH)	Heat of Rejection (MBTUH)	Power (kW)	EER	Entering Fluid Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp (°F)	Total Capacity (MBTUH)	Heat of Absorption (MBTUH)	Power Input (kW)	COP
50	1.8	1.4	75/63	14.1	10.9	16.7	0.8	18.5	30	1.8	1.7	60	7.8	5.5	0.8	2.89
			80/67	15.0	11.2	17.6	0.8	19.8				70	7.7	5.2	0.8	2.68
			85/71	16.0	11.5	18.6	0.8	21.2				80	7.5	5.0	0.9	2.47
	2.8	2.7	75/63	14.5	11.1	17.0	0.7	20.4		2.8	3.2	60	9.5	7.0	0.8	3.37
			80/67	15.5	11.4	17.9	0.7	22.1				70	9.3	6.7	0.9	3.10
			85/71	16.5	11.7	18.9	0.7	23.9				80	9.1	6.3	0.9	2.9
	3.7	4.4	75/63	14.8	11.2	17.1	0.7	21.5		3.7	5.2	60	10.2	7.7	0.8	3.55
			80/67	15.8	11.5	18.1	0.7	23.4				70	10.0	7.3	0.9	3.27
			85/71	16.8	11.9	19.1	0.7	25.5				80	9.7	6.9	0.9	3.00
60	1.8	1.3	75/63	13.5	10.6	16.3	0.8	16.1	40	1.8	1.6	60	8.8	6.4	0.8	3.16
			80/67	14.4	11.0	17.2	0.8	17.2				70	8.7	6.1	0.9	2.93
			85/71	15.3	11.2	18.1	0.8	18.3				80	8.5	5.8	0.9	2.72
	2.8	2.5	75/63	13.9	10.8	16.5	0.8	17.7		2.8	3.0	60	10.8	8.3	0.8	3.74
			80/67	14.8	11.2	17.5	0.8	19.0				70	10.6	7.9	0.9	3.44
			85/71	15.8	11.4	18.5	0.8	20.5				80	10.4	7.5	1.0	3.2
	3.7	4.2	75/63	14.1	10.9	16.7	0.8	18.6		3.7	4.8	60	11.7	9.1	0.9	3.97
			80/67	15.1	11.2	17.7	0.8	20.1				70	11.4	8.7	0.9	3.63
			85/71	16.1	11.5	18.7	0.7	21.8				80	11.2	8.2	1.0	3.33
70	1.8	1.2	75/63	12.8	10.4	15.9	0.9	14.0	50	1.8	1.5	60	9.8	7.4	0.8	3.46
			80/67	13.7	10.6	16.8	0.9	14.9				70	9.7	7.1	0.9	3.21
			85/71	14.6	10.9	17.6	0.9	15.8				80	9.6	6.8	0.9	2.97
	2.8	2.4	75/63	13.2	10.5	16.1	0.9	15.3		2.8	2.8	60	12.3	9.7	0.9	4.14
			80/67	14.2	10.8	17.1	0.9	16.4				70	12.1	9.3	0.9	3.80
			85/71	15.1	11.1	18.0	0.9	17.6				80	11.8	8.8	1.0	3.47
	3.7	4.0	75/63	13.5	10.6	16.3	0.8	16.1		3.7	4.6	60	13.3	10.6	0.9	4.41
			80/67	14.4	10.9	17.2	0.8	17.3				70	13.0	10.1	0.9	4.02
			85/71	15.4	11.2	18.2	0.8	18.7				80	12.7	9.6	1.0	3.67
80	1.8	1.1	75/63	12.2	10.1	15.5	1.0	12.2	60	1.8	1.4	60	11.0	8.4	0.9	3.78
			80/67	13.0	10.4	16.3	1.0	12.9				70	10.9	8.1	0.9	3.50
			85/71	13.8	10.8	17.2	1.0	13.7				80	10.7	7.8	1.0	3.23
	2.8	2.3	75/63	12.6	10.3	15.7	0.9	13.3		2.8	2.7	60	13.8	11.2	0.9	4.56
			80/67	13.5	10.6	16.6	0.9	14.2				70	13.6	10.7	1.0	4.16
			85/71	14.3	10.9	17.5	0.9	15.2				80	13.3	10.2	1.0	3.80
	3.7	3.8	75/63	12.8	10.4	15.9	0.9	13.9		3.7	4.3	60	15.0	12.3	0.9	4.87
			80/67	13.7	10.6	16.8	0.9	14.9				70	14.6	11.7	1.0	4.41
			85/71	14.6	11.0	17.7	0.9	16.0				80	14.3	11.1	1.0	4.01
90	1.8	1.1	75/63	11.5	9.8	15.1	1.1	10.6	70	1.8	1.3	60	12.2	9.6	0.9	4.12
			80/67	12.3	10.2	15.9	1.1	11.2				70	12.1	9.3	0.9	3.80
			85/71	13.1	10.5	16.7	1.1	11.8				80	12.0	8.9	1.0	3.51
	2.8	2.2	75/63	11.9	9.9	15.3	1.0	11.5		2.8	2.5	60	15.4	12.7	0.9	5.00
			80/67	12.7	10.3	16.2	1.0	12.2				70	15.1	12.1	1.0	4.53
			85/71	13.5	10.7	17.0	1.0	13.0				80	14.9	11.6	1.1	4.12
	3.7	3.6	75/63	12.1	10.0	15.5	1.0	12.0		3.7	4.1	60	16.7	13.9	0.9	5.35
			80/67	13.0	10.4	16.3	1.0	12.8				70	16.3	13.3	1.0	4.82
			85/71	13.8	10.8	17.2	1.0	13.7				80	15.9	12.7	1.1	4.35
100	1.8	1.1	75/63	10.9	9.5	14.7	1.2	9.2	80	1.8	1.2	60	13.5	10.8	0.9	4.48
			80/67	11.6	9.9	15.5	1.2	9.7				70	13.4	10.5	1.0	4.11
			85/71	12.3	10.2	16.3	1.2	10.2				80	13.2	10.1	1.0	3.77
	2.8	2.1	75/63	11.2	9.7	14.9	1.1	9.9		2.8	2.4	60	17.1	14.3	0.9	5.45
			80/67	12.0	10.1	15.7	1.1	10.5				70	16.7	13.7	1.0	4.90
			85/71	12.8	10.3	16.6	1.1	11.2				80	16.4	13.1	1.1	4.45
	3.7	3.4	75/63	11.4	9.7	15.0	1.1	10.3		3.7	3.9	60	18.5	15.7	0.9	5.87
			80/67	12.2	10.1	15.9	1.1	11.0				70	18.1	15.0	1.0	5.29
			85/71	13.0	10.4	16.7	1.1	11.7				80	17.7	14.3	1.1	4.76
110	1.8	1.0	75/63	10.2	9.3	14.4	1.3	7.9	90	1.8	1.2	60	14.8	12.1	0.9	4.8
			80/67	10.8	9.6	15.1	1.3	8.3				70	14.7	11.7	1.0	4.4
			85/71	11.5	10.0	15.9	1.3	8.7				80	14.5	11.3	1.1	4.1
	2.8	2.0	75/63	10.5	9.5	14.5	1.2	8.5		2.8	2.3	60	18.7	15.9	0.9	6.0
			80/67	11.2	9.9	15.3	1.2	9.0				70	18.4	15.3	1.0	5.4
			85/71	12.0	10.1	16.1	1.3	9.5				80	18.0	14.6	1.1	4.9
	3.7	3.3	75/63	10.7	9.5	14.7	1.2	8.9		3.7	3.7	60	20.3	17.5	0.9	6.5
			80/67	11.4	9.8	15.4	1.2	9.4				70	19.8	16.8	1.0	5.8
			85/71	12.2	10.2	16.2	1.2	10.0				80	19.4	16.0	1.1	5.2

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the BST selection software.

Ratings below 40°F are with a methanol solution.

DISCLAIMER: The performance reported herein is based on testing by FHP. Variations in the installation and operational environment may alter performance. Bosch disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. In addition, continuous research and development may result in a change to an appliances design and specifications at the time of order, which Bosch may change without notice. Before purchase, confirm the design specifications of the appliance.

CA R-454B Model Series - Commercial Water Source Heat Pumps



Capacity Data CA018 (475 CFM)																
Cooling									Heating							
Entering Water Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp DB/WB (°F)	Total Capacity (MBTUH)	Sensible Capacity (MBTUH)	Heat of Rejection (MBTUH)	Power (kW)	EER	Entering Fluid Temp (°F)	Water flow (GPM)	Pressure Drop (PSI)	Entering Air Temp (°F)	Total Capacity (MBTUH)	Heat of Absorption (MBTUH)	Power Input (kW)	COP
50	2.2	1.9	75/63	17.5	12.5	20.8	1.0	17.5	30	2.2	1.0	60	12.1	9.0	1.1	3.26
			80/67	18.6	12.8	21.9	1.0	18.7				70	11.8	8.6	1.2	2.99
			85/71	19.8	13.1	23.1	1.0	19.9				80	11.6	8.1	1.2	2.77
	3.3	3.7	75/63	18.0	12.7	21.1	0.9	19.8		3.3	2.0	60	14.2	10.9	1.1	3.62
			80/67	19.2	13.0	22.3	0.9	21.4				70	13.9	10.4	1.2	3.33
			85/71	20.5	13.4	23.5	0.9	23.2				80	13.6	9.9	1.3	3.1
	4.5	6.1	75/63	18.3	12.9	21.2	0.9	21.3		4.5	3.2	60	15.0	11.6	1.2	3.76
			80/67	19.6	13.2	22.4	0.8	23.2				70	14.6	10.9	1.2	3.44
			85/71	20.9	13.5	23.7	0.8	25.3				80	14.1	10.3	1.3	3.13
60	2.2	1.8	75/63	16.7	12.2	20.4	1.1	14.9	40	2.2	1.0	60	13.7	10.5	1.1	3.54
			80/67	17.8	12.5	21.5	1.1	15.9				70	13.5	10.0	1.2	3.26
			85/71	18.9	12.8	22.7	1.1	16.8				80	13.2	9.6	1.3	3.00
	3.3	3.5	75/63	17.2	12.4	20.7	1.0	16.7		3.3	1.9	60	16.2	12.8	1.2	3.95
			80/67	18.4	12.8	21.8	1.0	17.9				70	15.9	12.2	1.3	3.63
			85/71	19.6	13.1	23.0	1.0	19.2				80	15.6	11.6	1.4	3.3
	4.5	5.8	75/63	17.5	12.6	20.8	1.0	17.7		4.5	3.0	60	17.3	13.8	1.2	4.14
			80/67	18.7	12.9	22.0	1.0	19.1				70	16.8	13.1	1.3	3.75
			85/71	20.0	13.2	23.2	1.0	20.7				80	16.4	12.3	1.4	3.43
70	2.2	1.7	75/63	15.9	11.9	20.0	1.2	12.9	50	2.2	0.9	60	15.4	12.0	1.2	3.83
			80/67	17.0	12.2	21.1	1.3	13.6				70	15.2	11.6	1.3	3.52
			85/71	18.1	12.4	22.2	1.3	14.4				80	15.0	11.1	1.4	3.25
	3.3	3.3	75/63	16.5	12.1	20.2	1.2	14.2		3.3	1.8	60	18.4	14.7	1.3	4.29
			80/67	17.6	12.5	21.4	1.2	15.2				70	18.0	14.1	1.3	3.92
			85/71	18.7	12.7	22.6	1.2	16.2				80	17.7	13.5	1.4	3.59
	4.5	5.5	75/63	16.7	12.2	20.4	1.1	15.0		4.5	2.9	60	19.7	16.0	1.3	4.48
			80/67	17.9	12.6	21.6	1.1	16.1				70	19.4	15.3	1.4	4.09
			85/71	19.1	12.8	22.8	1.1	17.3				80	18.8	14.5	1.5	3.72
80	2.2	1.6	75/63	15.2	11.5	19.6	1.4	11.1	60	2.2	0.9	60	17.2	13.7	1.2	4.11
			80/67	16.2	11.8	20.7	1.4	11.7				70	16.9	13.2	1.3	3.77
			85/71	17.2	12.2	21.7	1.4	12.3				80	16.8	12.7	1.4	3.47
	3.3	3.2	75/63	15.7	11.7	19.8	1.3	12.2		3.3	1.7	60	20.6	16.8	1.3	4.61
			80/67	16.8	12.0	21.0	1.3	13.0				70	20.3	16.2	1.4	4.22
			85/71	17.8	12.4	22.1	1.3	13.8				80	19.9	15.5	1.5	3.86
	4.5	5.2	75/63	15.9	11.8	20.0	1.2	12.8		4.5	2.7	60	22.2	18.3	1.3	4.84
			80/67	17.0	12.2	21.1	1.2	13.7				70	21.8	17.5	1.4	4.41
			85/71	18.2	12.5	22.3	1.2	14.6				80	21.3	16.7	1.6	4.02
90	2.2	1.5	75/63	14.4	11.2	19.2	1.5	9.6	70	2.2	0.8	60	19.0	15.4	1.3	4.38
			80/67	15.4	11.5	20.2	1.5	10.1				70	18.9	14.9	1.4	4.03
			85/71	16.3	11.9	21.3	1.5	10.6				80	18.7	14.3	1.5	3.71
	3.3	3.0	75/63	14.9	11.3	19.4	1.4	10.5		3.3	1.6	60	22.9	19.0	1.4	4.95
			80/67	15.9	11.8	20.5	1.4	11.1				70	22.5	18.3	1.5	4.50
			85/71	16.9	12.0	21.6	1.4	11.8				80	22.2	17.6	1.6	4.11
	4.5	5.0	75/63	15.1	11.4	19.5	1.4	11.0		4.5	2.6	60	24.8	20.8	1.4	5.20
			80/67	16.2	11.9	20.6	1.4	11.7				70	24.2	19.9	1.5	4.71
			85/71	17.3	12.1	21.8	1.4	12.4				80	23.8	19.0	1.6	4.29
100	2.2	1.4	75/63	13.6	10.8	18.8	1.6	8.3	80	2.2	0.8	60	21.0	17.2	1.3	4.66
			80/67	14.5	11.2	19.8	1.7	8.7				70	20.8	16.7	1.4	4.29
			85/71	15.4	11.5	20.8	1.7	9.1				80	20.6	16.1	1.5	3.93
	3.3	2.9	75/63	14.0	11.1	19.0	1.6	9.0		3.3	1.6	60	25.3	21.3	1.4	5.28
			80/67	15.0	11.4	20.1	1.6	9.5				70	24.9	20.5	1.5	4.79
			85/71	16.0	11.7	21.1	1.6	10.1				80	24.5	19.7	1.6	4.36
	4.5	4.8	75/63	14.3	11.2	19.1	1.5	9.4		4.5	2.5	60	27.4	23.2	1.4	5.56
			80/67	15.3	11.4	20.2	1.5	10.0				70	26.8	22.3	1.6	5.01
			85/71	16.3	11.9	21.3	1.5	10.6				80	26.3	21.3	1.7	4.54
110	2.2	1.4	75/63	12.7	10.2	18.4	1.8	6.9	90	2.2	0.8	60	23.0	19.1	1.4	5.0
			80/67	13.5	11.2	19.4	1.8	7.4				70	22.7	18.5	1.5	4.5
			85/71	14.3	11.6	20.3	1.8	7.8				80	22.6	17.9	1.6	4.2
	3.3	2.8	75/63	13.2	10.6	18.6	1.7	7.7		3.3	1.5	60	27.8	23.6	1.5	5.6
			80/67	14.1	11.0	19.6	1.7	8.1				70	27.3	22.7	1.6	5.1
			85/71	15.0	11.4	20.7	1.8	8.5				80	26.9	21.9	1.7	4.6
	4.5	4.6	75/63	13.4	10.7	18.7	1.7	8.0		4.5	2.4	60	29.9	25.7	1.5	5.9
			80/67	14.4	11.1	19.8	1.7	8.5				70	29.4	24.7	1.6	5.3
			85/71	15.3	11.4	20.8	1.7	9.0				80	28.8	23.7	1.8	4.8

 Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the BST selection software.

Ratings below 40°F are with a methanol solution.

DISCLAIMER: The performance reported herein is based on testing by FHP. Variations in the installation and operational environment may alter performance. Bosch disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. In addition, continuous research and development may result in a change to an appliances design and specifications at the time of order, which Bosch may change without notice. Before purchase, confirm the design specifications of the appliance.