

TW R-454B Model Series

Residential Water to Water Heat Pumps

Engineering
Submittal
Sheet



BOSCH

Overview and Certifications



- ▶ 2-5 and 10 ton capacities
- ▶ High efficiency two-stage scroll compressors
- ▶ Dual density compressor blankets provide quiet operation
- ▶ Durable, high quality, pre-painted galvanized steel cabinet
- ▶ Low GWP ready (R-454B refrigerant)

Standard Features, Factory Installed Options, and Field Install Accessories

Standard Features

- ▶ **Two Stage**
 - Scroll compressors
- ▶ **Unit Configuration**
 - Copper or cupro-nickel source side coax coil
 - Front water connections (2-5 ton)
 - Rear water connections (10 ton)
 - Copper load side coax coil
 - Insulated coaxial heat exchangers and refrigerant piping
 - Single point electrical connections
- ▶ **1/2" Dual Density Fiber Insulation**
 - 1.5 lb.cu.ft. density micromat fiberglass insulation for both thermal and noise reduction
 - Non-combustible, non-hydroscopic and does not support fungal growth
 - Meets NFPA 90A and 90B for fire protection
 - Meets the GREENGUARD Indoor Air Quality Standard
 - Multi-density sound compressor blanket
- ▶ **Compressors**
 - Floating compressor base pan for quiet operation
 - Scroll type compressors on all sizes
- ▶ **TXV (Thermal Expansion Valve)**
 - Improves refrigerant management and efficiencies
- ▶ **Reliability - Durability – Serviceability**
 - Alert communicating circuit board
 - Schrader access ports
 - High & low pressure switches
 - Lockout circuit
 - Unit protection module (UPM) standard on all models
- ▶ **Electronic Circuit Board UPM**

The electronic circuit board provides protection with:

 - Random start of unit
 - Anti-short cycling (5 minute delay)
 - Alarm communicating output
 - Low pressure switch bypass at cold water start up
 - It also monitors and communicates standard safety features/ alerts/ operation/ protection:
 - Low pressure switch
 - High pressure switch
 - Evaporator freeze protection
 - Water coil freeze switch
 - This circuit board can communicate with a Bosch thermostat that alerts the customer of adverse conditions.
- ▶ **75 VA Transformer**
- ▶ **Standard Warranty**
 - 10 year all parts limited warranty
 - 10 year labor limited warranty
- ▶ For full warranty details:
<https://www.bosch-homecomfort.com/us/en/residential/service/product-warranty-library/heat-pump-geothermal-warranty-documents/>

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

Standard Features, Factory Installed Options, and Field Install Accessories

Factory Installed Options

- ▶ **Cupro-Nickel Coil:**
 - Recommended in conditions anticipating moderate scale formation or in brackish water (available on source-side).
- ▶ **Domestic Hot Water Heat Recovery Package (HRP):**
 - Utilizes the compressor's superheated discharge gas to preheat domestic hot water.
 - The HRP reduces the amount of electricity or fossil fuels otherwise used for hot water.
- ▶ **Unit Protection Module (UPM)**
 - Low pressure switch protection
 - High pressure switch protection
 - Alarm output
 - Anti-short cycling
 - Compressor minimum run time (5 minutes)
 - Low pressure bypass at start up (2 minute delay)
 - Random start of unit
 - Brownout protection
 - Water coil/coaxial coil/condenser freeze protection

Field Installed Options

- ▶ **Swivel Water Connections**
 - 3/4" or 1" FPT swivel water connection
- ▶ **Pump/Valve Relay Kit**
 - This relay is used to energize a supply pump or solenoid valve when there is a call for compressor operation. This relay can be used to switch either high or low voltage power.
- ▶ **Flow Proving Switch (DPS)**
 - Shuts down the WSHP before unit can go into hard lockout faults due to water flow issues (ie. high head pressure, etc.)
 - Building managers and homeowners alike do not have to manually reset the WSHP by entering tenant space or private residence.
- ▶ **SmartStart Assist Kit**
 - An option which provides a means of reducing inrush currents at compressor startup. Light flickering is eliminated, and a smooth start is achieved (only available on scroll compressor models).
- ▶ **Stainless Steel Hose Kits**
 - Available in various lengths and diameters depending on the need for your application.
- ▶ **Flow Center Kits**
 - Built for easy installation and are available in a wide variety of combinations.
 - 10 year limited warranty. For full warranty details: <https://www.bosch-homecomfort.com/us/en/residential/service/product-warranty-library/heat-pump-geothermal-warranty-documents/>

Control Options

Control Options

There are two main choices when designating controllability for the water-to-water models. There is either a factory installed unit mounted controller (UMC) or an option for integration with a field supplied remote mounted controller (RMC). Regardless of the controls selected every unit will come with a factory installed unit protection module (UPM).

► **Unit Mounted Controller (UMC):**

Designed to enhance the unit operation with more flexibility, accurate control and operating models. The unit mounted controller provides an increased level of comfort in the conditioned space together with solid-state reliability and ease of operation. When UMC is used, freeze protection is set from the factory at 40° F. Some functionality of our proven UPM module are incorporated into the unit mounted controller for unit protection. The unit mounted controller is available on all Bosch Thermotechnology water-to-water units.

- Tactile touchpad for temperature and mode adjustment.
- Digital display of temperature in either degrees Fahrenheit or Celsius.
- LED display provides indication for unit operating mode and fault indication for high or low pressure lockout.
- Adjustable temperature set point from 60° F through 80° F (15.5° C through 26.7° C).
- Adjustable Temperature Differential between 1° F and 10° F (0.6° C and 5.6° C).
- Selectable Options:
 - Manual/automatic changeover
- Additional Features
 - 5 minute anti-short cycling delay
 - Random start
 - 120 second low pressure bypass timer prevents nuisance lockouts during cold winter start up
 - Intelligent reset allows the unit to automatically restart after 5 minutes if a fault is no longer active

► **Remote Mounted Control (RMC):**

This feature provides the flexibility to connect a variety of appropriate remote mounted controllers to a low voltage terminal strip within the water-to-water unit. All water-to-water models come with freeze protection internal to the unit.

TW R-454B Model Series

Residential Water to Water Heat Pumps



BOSCH

Field Installed Accessory - SmartStart Assist Kit

Part Number	025	035	049	061	122
8733957159	•	•			
8733957160			•	•	•

Field Installed Accessory - Flow Proving Switch (Differential Pressure) Kit

Part Number	025	035	049	061	122
8733920264	•	•	•	•	•

Field Installed Accessory - Swivel Connector Kit (Two Connectors per Package)

Part Number	Type & Size	025	035	049	061	122
8733927179	Male 3/4" NPT	•	•			
8733927180	Male 1" NPT			•	•	

Field Installed Accessory - Pump/Valve Relay Kit

Part Number	025	035	049	061	122
8733951906	•	•	•	•	•

TW R-454B Model Series

Residential Water to Water Heat Pumps



Field Installed Accessory - Stainless Steel Hose Kits

Options	Option 1	Option 2	Option 3**	Option 4**, ***	Option 5**, ***	Option 6**, ***
Hose Size (Length, Diameter)	Hoses Only with Swivel	Hose Kit Hoses with Ported Ball Valves, Swivel and One P/T*	Hose Kit with Automatic Flow Valve (AFV)*	Hose kit with AFV, Y-Strainer & Blow Down Valve*	Hose Kit with AFV and Electric Valve*	Hose Kit with AFV, Y-Strainer, BDV and Electric Valve*
	Part #	Part #	Part #	Part #	Part #	Part #
12 Inch						
1/2" L	T111H02121	T111H02122	T111H02123	T111H02124	T111H02125	T111H02126
24 Inch						
3/4" S	T111H03241	T111H03242	T111H03243	T111H03244	T111H03245	T111H03246
1" L	T111H04241	T111H04242	T111H04243	T111H04244	T111H04245	T111H04246
1" S	T111H04241	T111H04242	T111H04247	T111H04248	T111H04249	T111H04240
1 - 1/4" S	T111H05241	T111H05242	T111H05243	T111H05244	T111H05245	T111H05246
1 - 1/2" L	T111H06241	T111H06242	T111H06243	T111H06244	T111H06245	T111H06246
1 - 1/2" S	T111H06241	T111H06242	T111H06247	T111H06248	T111H06249	T111H06240
2" S	T111H08241	T111H08242	T111H08243	T111H08244	T111H08245	T111H08246
36 Inch						
3/4" S	T111H03361	T111H03362	T111H03363	T111H03364	T111H03365	T111H03366
1" L	T111H04361	T111H04362	T111H04363	T111H04364	T111H04365	T111H04366
1" S	T111H04361	T111H04362	T111H04367	T111H04368	T111H04369	T111H04360
1 - 1/4" S	T111H05361	T111H05362	T111H05363	T111H05364	T111H05365	T111H05366
1 - 1/2" L	T111H06361	T111H06362	T111H06363	T111H06364	T111H06365	T111H06366
1 - 1/2" S	T111H06361	T111H06362	T111H06367	T111H06368	T111H06369	T111H06360
2" S	T111H08361	T111H08362	T111H08363	T111H08364	T111H08365	T111H08366

* All Hose Kits include S/R ported ball valves with swivel and P/T port.

** 'L' and 'S' only apply to kit options 3 through 6

*** GMP's are required for hose kits in options 3-6

Hose Kit Flow Rates by Size

Please see Technical Service Bulletin: Heat Pump Hose Kits – Water Flow Rates.

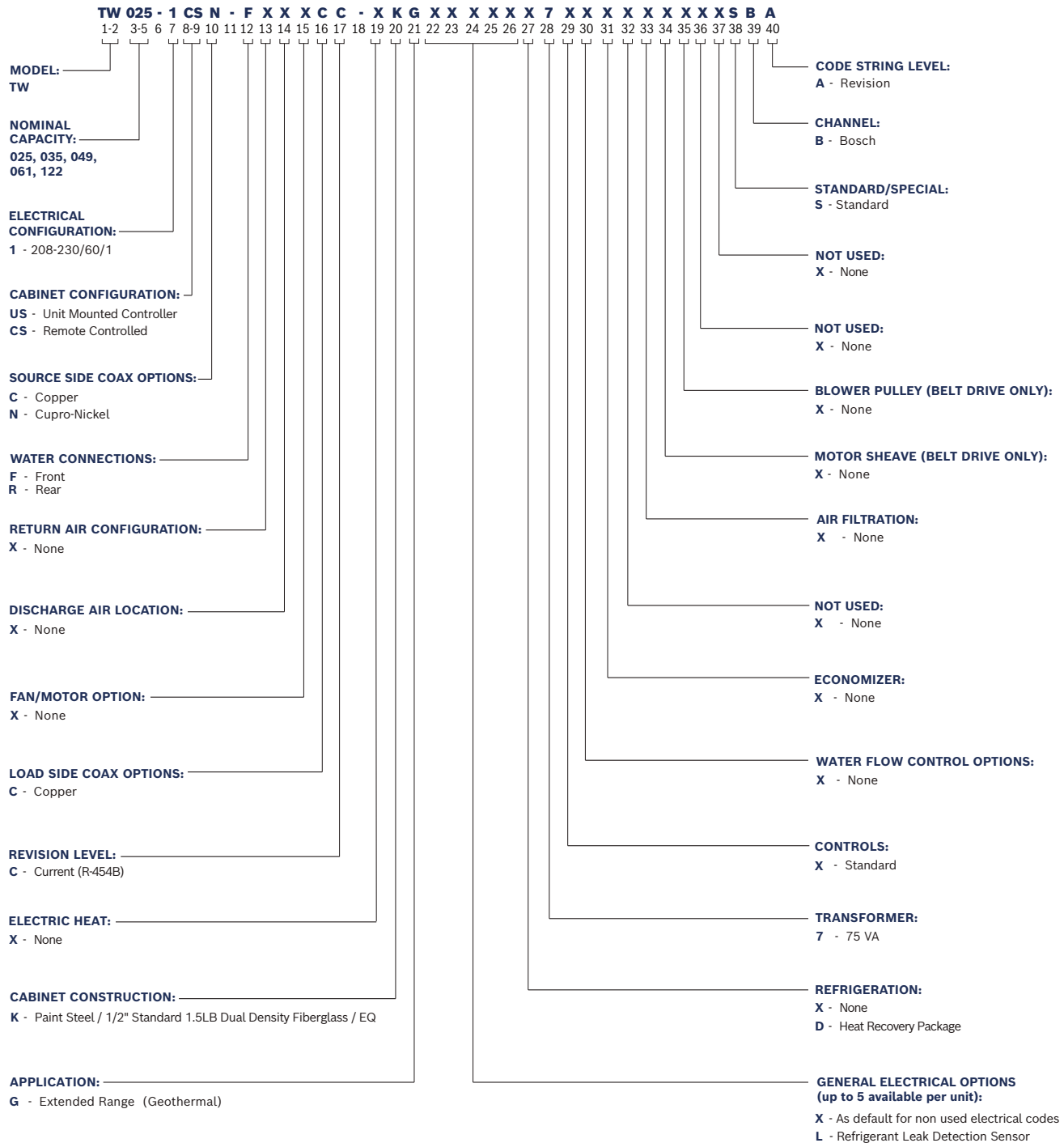
This document is located at www.bosch-homecomfort.us under Technical Documentation > Service Bulletins > Heating and Cooling Heat Pump Systems > Water Source Heat Pump Service Bulletins.

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

Residential Water to Water Heat Pumps



Model Nomenclature



TW R-454B Model Series

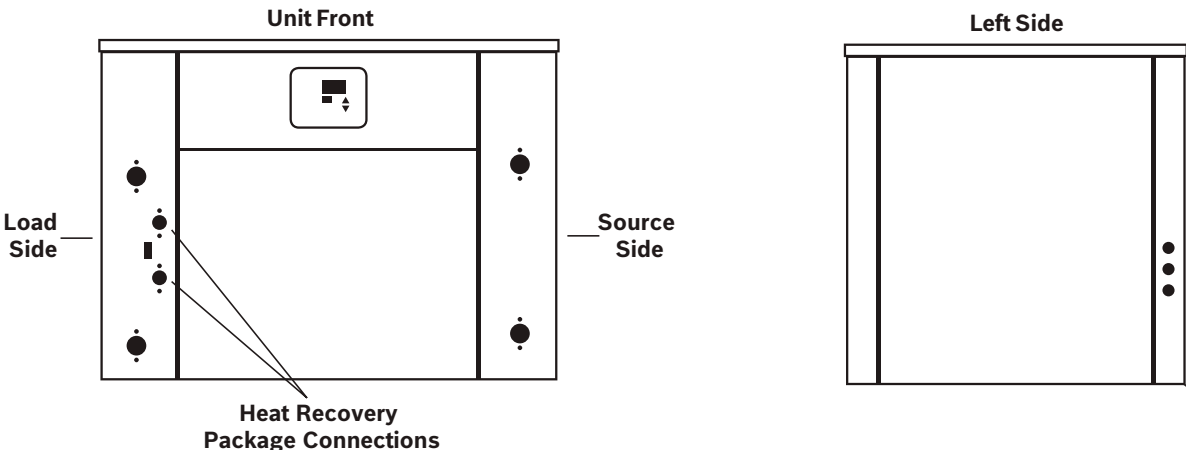
Residential Water to Water Heat Pumps



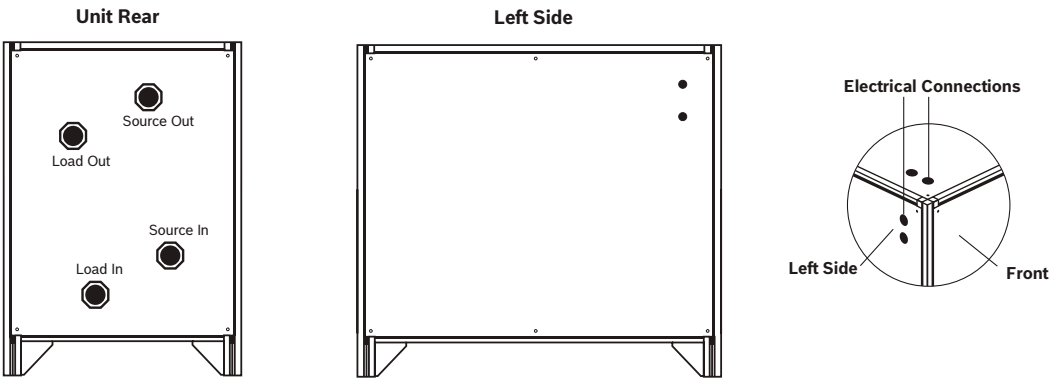
BOSCH

AHRI Ratings (13256-1)														
Model Number	Load	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump				GPM
		Cooling 86 deg.F		Heating 68 deg.F		Cooling 59 deg.F		Heating 50 deg.F		FL Cooling 77 deg.F PL Cooling 68 deg.F		FL Heating 32 deg.F PL Heating 41 deg.F		
		Capacity Btu/h	EER Btuh/W-h	Capacity Btu/h	COP	Capacity Btu/h	EER Btuh/W-h	Capacity Btu/h	COP	Capacity Btu/h	EER Btuh/W-h	Capacity Btu/h	COP	
025	Full	22,600	15.80	31,400	5.09	24,400	24.40	25,600	4.25	23,600	18.70	19,800	3.26	8.00
	Part	16,500	17.00	22,800	5.48	18,100	29.20	17,900	4.05	17,900	25.00	15,800	3.46	
035	Full	32,400	14.50	45,000	4.80	34,600	21.50	37,200	3.96	33,000	16.50	28,800	3.16	9.00
	Part	22,400	14.70	31,600	4.90	25,000	24.90	25,600	3.86	24,600	21.20	22,200	3.26	
049	Full	41,000	14.50	59,000	4.99	44,000	21.50	50,000	4.25	42,500	16.90	39,500	3.46	12.00
	Part	30,000	14.70	42,500	5.09	33,000	24.40	35,200	4.05	32,200	20.80	30,400	3.46	
061	Full	49,000	13.60	72,000	4.70	55,000	20.70	59,500	3.96	51,500	15.90	47,500	3.16	13.00
	Part	35,600	13.80	53,000	4.90	40,000	23.30	43,000	3.86	38,500	19.70	37,800	3.26	
122	Full	107,000	14.40	142,000	4.60	121,000	21.60	120,000	3.86	113,000	16.70	99,000	3.26	30.00
	Part	78,000	14.70	103,000	4.60	87,000	24.20	85,000	3.66	85,000	20.60	77,000	3.26	

Unit Configurations - TW025-061 Model



Unit Configuration - TW122 Model



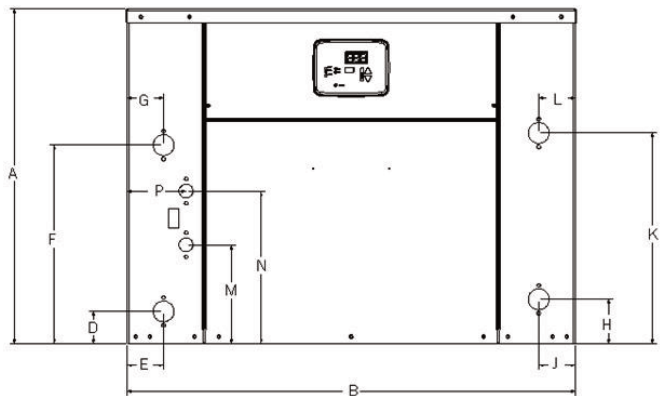
TW R-454B Model Series

Residential Water to Water Heat Pumps

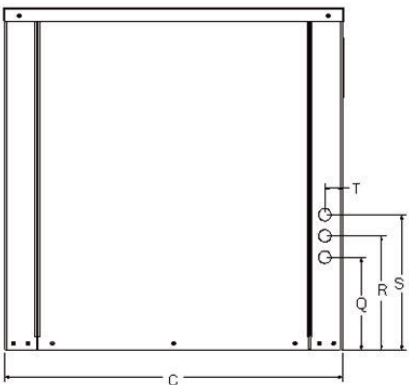


Unit Dimensions and Connections - TW025-061 Model

Unit Front



Left Side



Unit Dimensions - TW025-061 Model

Model Number	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	Water Connections	HRP Connections
	Height	Width	Depth	Load				Source				HRP			Electrical					
				Load Inlet Height	Load Inlet to Cabinet Edge	Load Outlet Height	Load Outlet to Cabinet Edge	Source Inlet Height	Source Inlet to Cabinet Edge	Source Outlet Height	Source Outlet to Cabinet Edge	HRP Inlet	HRP Outlet	HRP to Cabinet Edge	Knockout 1 Height	Knockout 1 Height	Knockout 1 Height	Knockout to Cabinet Edge		
025	24.00	32.50	24.00	2.30	2.55	14.30	2.65	3.80	2.67	15.80	2.67	7.24	11.12	4.31	5.80	8.05	10.30	1.25	3/4 FPT	1/2 FPT
035	24.00	32.50	24.00	2.30	2.55	14.30	2.65	3.80	2.67	15.80	2.67	7.24	11.12	4.31	5.80	8.05	10.30	1.25	3/4 FPT	1/2 FPT
049	24.00	32.50	24.00	2.90	2.19	16.90	2.19	3.12	2.17	17.12	2.17	7.24	11.12	4.31	5.80	8.05	10.30	1.25	1 FPT	1/2 FPT
061	24.00	32.50	24.00	2.90	2.19	16.90	2.19	3.10	2.17	17.10	2.17	7.24	11.12	4.31	5.80	8.05	10.30	1.25	1 FPT	1/2 FPT

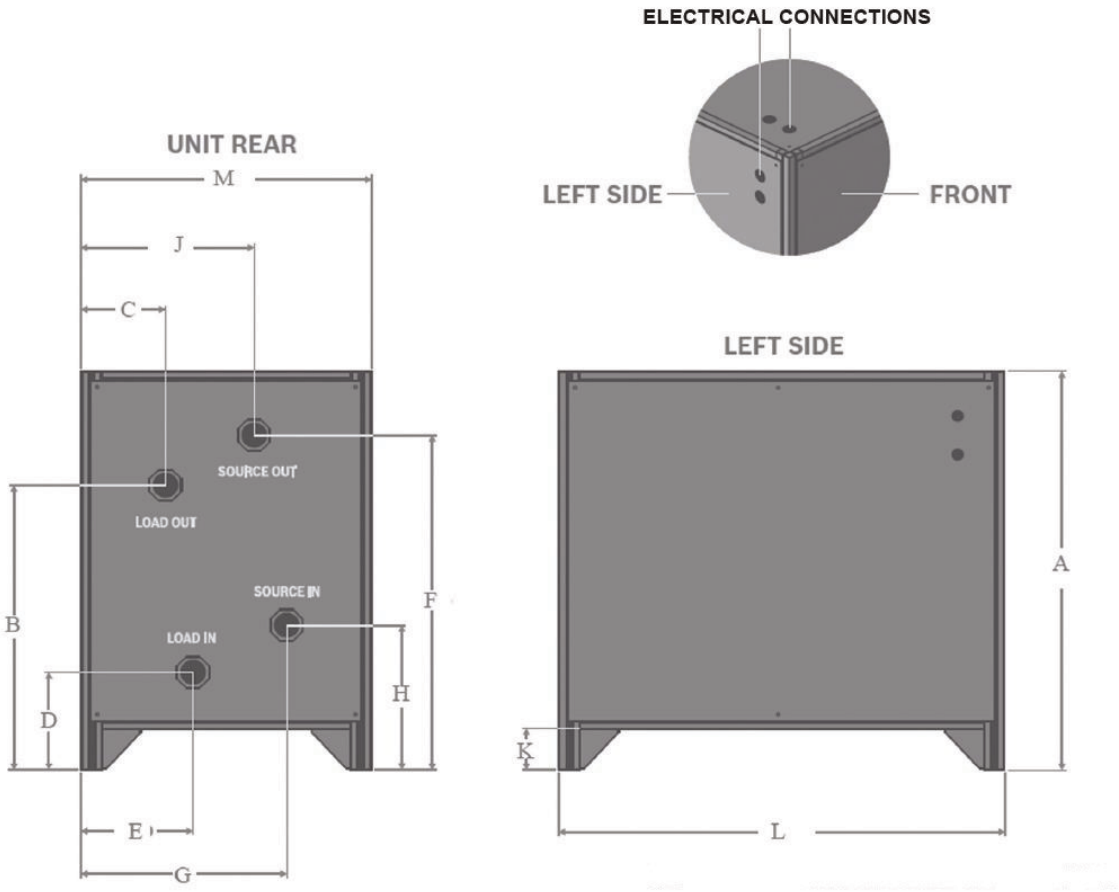
NOTES: All dimensions within +/- 0.125". Specifications subject to change without notice

TW R-454B Model Series

Residential Water to Water Heat Pumps



Unit Dimensions and Connections - TW122 Model



Unit Dimensions - TW122 Model

Model Number	A	B	C	D	E	F	G	H	J	K	L	M	Water Connections
	Height	Load				Source				Foot Height	Depth	Width	
		Load Outlet Height	Load Outlet to Cabinet Edge	Load Inlet Height	Load Inlet to Cabinet Edge	Source Outlet Height	Source Inlet to Cabinet Edge	Source Inlet Height	Source Outlet to Cabinet Edge				
122	37.75	27.25	8.13	8.00	10.63	32.75	20.13	13.50	17.63	3.75	46.00	28.00	1-1/4" FPT

NOTES: All dimensions within +/- 0.125". Specifications subject to change without notice

TW R-454B Model Series

Residential Water to Water Heat Pumps



Operating Limits				
Limit			Cooling	Heating
Minimum ambient air			50°F	40°F
Maximum ambient air			100°F	85°F
Rated ambient air			80°F	68°F
Antifreeze Protection Required LWT / EWT			-	< 40/< 50°F
Minimum water coil entering fluid			45°F	30°F
Maximum water coil entering fluid			110°F	90°F
Rated water coil entering fluid	Water Loop application	Load	53.6°F	104°F
		Source	86°F	68°F
	Ground Loop application	Load	53.6°F	104°F
		Source	77°F (FL) 68°F (PL)	32°F (FL) 41°F (PL)
	Ground Water application	Load	53.6°F	104°F
		Source	59°F	50°F
Maximum operating water pressure			450psi/3,103kPA	
Minimum operating water flow rate			1.5 GPM per ton	

*Antifreeze solution is required at these fluid temperatures.



Minimum / maximum limits are only for start up conditions. Only one parameter out of these three: entering source temperature, entering load temperature, or flow rate is permissible at minimum or maximum conditions at the same time. Refer to the extended performance data tables to determine allowable operating limits.

TW R-454B Model Series

Residential Water to Water Heat Pumps



Antifreeze Correction							
Antifreeze Type	Antifreeze Volume %	Cooling			Heating		WPD Correction Factor EWT 30 °F
		EWT 90 Deg.F			EWT 30 Deg. 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	0.997	0.997	1.004	0.989	0.997	1.060
	10	0.994	0.994	1.006	0.986	0.995	1.125
	15	0.990	0.990	1.009	0.978	0.988	1.190
	25	0.983	0.983	1.016	0.960	0.979	1.300
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	0.997	0.997	1.003	0.993	0.998	1.060
	10	0.995	0.995	1.004	0.986	0.996	1.120
	15	0.992	0.992	1.005	0.980	0.993	1.190
	25	0.988	0.988	1.009	0.970	0.990	1.330
	30	0.985	0.985	1.012	0.965	0.987	1.400

TW R-454B Model Series

Residential Water to Water Heat Pumps



Waterside Pressure Drop					
Model Number	GPM	Chilled Fluid Side (55°F)		Cond. Fluid Side (85°F)	
		Pressure Drop (PSIG)	Pressure Drop (ft of H2O)	Pressure Drop (PSIG)	Pressure Drop (ft of H2O)
025	3.0	0.4	0.9	0.3	0.7
	4.0	0.6	1.4	0.5	1.2
	5.0	0.9	2.1	0.7	1.7
	6.0	1.2	2.8	1.0	2.4
	8.0	2.0	4.6	1.7	3.9
035	4.5	0.8	1.8	0.7	1.5
	6.0	1.3	2.9	1.1	2.5
	7.5	1.8	4.2	1.6	3.7
	9.0	2.5	5.7	2.2	5.1
	12.0	4.1	9.4	3.6	8.4
049	6.0	0.7	1.5	0.9	2.0
	8.0	1.1	2.5	1.4	3.3
	10.0	1.6	3.7	2.1	4.9
	12.0	2.2	5.1	2.9	6.7
	16.0	3.6	8.4	4.8	11.1
061	7.5	1.3	3.0	1.2	2.9
	10.0	2.1	4.9	2.1	4.7
	12.5	3.1	7.2	3.0	7.0
	15.0	4.3	9.9	4.2	9.7
	20.0	7.1	16.3	7.0	16.1
122	18.0	1.3	3.0	1.2	2.9
	22.0	2.1	4.9	2.1	4.7
	26.0	3.1	7.2	3.0	7.0
	30.0	4.3	9.9	4.2	9.7
	34.0	7.1	16.3	7.0	16.1



All values based upon pure water at the indicated temperature.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Electrical Data									
Model Number	Voltage Code	Voltage/ Hz/ Phase	Voltage Min/Max	Compressor			Total Unit		
				Qty	RLA	LRA	Min. Circuit Amps	MOP CALC	MOP
025	1	208-230/60/1	197/253	1	10.3	62.0	12.8	23.1	20
035	1	208-230/60/1	197/253	1	14.6	90.0	18.2	32.7	30
049	1	208-230/60/1	197/253	1	18.3	138.0	22.9	41.3	40
067	1	208-230/60/1	197/253	1	25.2	147.3	31.5	56.7	50
122	1	208-230/60/1	197/253	2	25.2	147.3	56.7	81.9	80

TW R-454B Model Series

Residential Water to Water Heat Pumps



Physical Data						
Description	Unit	025	035	049	061	122
Compressor Type	qty	Scroll (1)	Scroll (1)	Scroll (1)	Scroll (1)	Scroll (2)
Max Water Working Pressure	PSIG/kPa	450/3,100	450/3,100	450/3,100	450/3,100	450/3,100
Water Connection Size - Load						
FPT	in	3/4	3/4	1	1	1-1/4
Coaxial Coil Volume	gal	0.47	0.64	1.00	1.00	2.06
Water Connection Size - Source						
FPT	in	3/4	3/4	1	1	1-1/4
Coaxial Coil Volume	gal	0.47	0.64	1.00	1.00	2.06
Cabinet						
Refrigeration Charge	oz	49	46	70	66	142
Weight - Operating	lbs	290	290	270	300	660
Weight - Shipping	lbs	310	310	290	320	680

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 025 - Full Load (Cooling)																						
Source			Load																			
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4 GPM						6 GPM						8 GPM						
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	
50	4.0	0.4	50																			
			60	25.4	27.9	2.2	47.3	0.9	29.8	27.1	29.7	2.4	51.0	0.9	31.3	28.1	30.7	2.5	53.0	0.9	31.9	
			70	29.0	31.6	2.4	55.5	0.9	33.4	31.2	33.9	2.7	59.6	0.9	35.2	32.4	35.1	2.8	61.9	0.9	35.9	
			80	31.6	34.2	2.1	64.2	0.9	35.9	35.7	38.3	3.0	68.1	0.9	39.2	37.0	39.7	3.1	70.7	0.9	40.0	
			90	37.0	39.6	2.8	71.4	0.9	40.7	40.2	43.0	3.4	76.5	0.9	43.3	41.8	44.6	3.5	79.5	0.9	44.4	
	6.0	0.9	50																			
			60																			
			70																			
			80	33.6	36.0	2.6	63.2	0.8	42.8	36.5	38.9	3.0	67.8	0.8	45.9	38.0	40.4	3.1	70.5	0.8	47.3	
			90	38.3	40.7	3.1	70.8	0.8	48.5	41.3	43.7	3.3	76.2	0.8	52.0	43.0	45.4	3.4	79.2	0.8	53.7	
	8.0	1.4	50																			
			60																			
			70																			
			80																			
			90	38.8	41.0	2.6	70.5	0.7	53.3	41.9	44.0	3.3	76.0	0.7	57.7	43.6	45.8	3.4	79.0	0.7	60.0	
70	4.0	0.4	50	20.4	23.4	2.2	39.9	1.1	18.2	21.5	24.6	2.1	42.9	1.1	19.0	22.1	25.3	2.2	44.5	1.2	19.2	
			60	23.4	26.6	1.7	48.3	1.1	20.4	25.0	28.2	2.3	51.7	1.2	21.4	26.0	29.3	2.6	53.5	1.2	21.9	
			70	26.8	30.2	2.4	56.6	1.2	22.8	28.8	32.2	2.7	60.4	1.2	24.1	30.0	33.5	2.9	62.5	1.2	24.7	
			80	31.6	35.1	4.1	64.2	1.2	26.0	33.7	37.2	4.3	68.7	1.2	27.3	34.3	37.9	3.3	71.4	1.2	27.5	
			90	35.0	38.5	3.3	72.4	1.2	28.3	37.4	41.0	3.3	77.5	1.3	29.7							
	6.0	0.8	50	19.6	22.5	1.6	40.3	1.1	18.4	21.8	24.9	2.1	42.8	1.1	20.1	22.5	25.6	2.2	44.4	1.1	20.5	
			60	23.7	26.8	2.1	48.2	1.1	21.8	25.6	28.7	2.5	51.5	1.1	23.1	26.4	29.6	2.5	53.4	1.1	23.6	
			70	27.7	30.8	2.5	56.2	1.1	24.9	28.2	31.4	2.1	60.6	1.1	25.3	30.7	34.0	2.9	62.3	1.1	27.0	
			80	32.0	35.3	3.5	64.0	1.1	28.3	33.6	36.9	2.9	68.8	1.1	29.5	35.2	38.5	3.2	71.2	1.2	30.5	
			90	36.1	39.4	3.7	71.9	1.1	31.6	37.7	40.9	2.9	77.4	1.2	32.8							
	8.0	1.3	50	20.0	22.9	1.6	40.1	1.1	19.0	22.0	25.0	2.1	42.7	1.1	20.6	22.7	25.7	2.2	44.4	1.1	21.0	
			60	23.9	26.9	2.1	48.1	1.1	22.3	25.8	28.9	2.4	51.4	1.1	23.8	26.7	29.8	2.5	53.3	1.1	24.4	
			70	28.0	31.1	2.5	56.0	1.1	25.8	29.9	33.1	2.8	60.0	1.1	27.4	31.0	34.2	2.8	62.2	1.1	28.1	
			80	32.2	35.3	3.2	63.9	1.1	29.4	34.1	37.3	3.0	68.6	1.1	31.0	35.6	38.8	3.2	71.1	1.1	32.1	
			90	36.7	39.8	3.2	71.6	1.1	33.4	39.0	42.2	3.3	76.9	1.1	35.4							
90	4.0	0.4	50	18.1	21.9	1.7	41.0	1.4	12.8	19.7	23.6	2.4	43.5	1.4	13.7	20.2	24.1	2.4	45.0	1.5	13.9	
			60	21.3	25.3	2.0	49.4	1.5	14.7	23.0	27.0	2.3	52.4	1.5	15.6	24.3	28.5	4.2	53.9	1.5	16.2	
			70	25.1	29.2	2.8	57.5	1.5	16.8	27.2	31.4	3.1	60.9	1.5	17.9	27.0	31.3	2.6	63.2	1.5	17.7	
			80	29.1	33.4	3.2	65.4	1.5	18.9	30.9	35.3	4.1	69.7	1.6	19.8	31.0	35.3	3.0	72.2	1.6	19.7	
			90	32.3	36.7	3.3	73.8	1.6	20.6	34.1	38.5	3.1	78.6	1.6	21.5							
	6.0	0.8	50	19.1	22.8	2.0	40.5	1.4	13.9	20.3	24.1	2.2	43.3	1.4	14.6	20.7	24.5	2.6	44.9	1.4	14.7	
			60	22.1	25.9	2.4	49.0	1.4	15.8	23.0	26.9	2.2	52.4	1.4	16.3	24.3	28.2	2.7	54.0	1.4	16.9	
			70	25.6	29.6	2.7	57.2	1.4	17.9	26.7	30.7	2.5	61.1	1.4	18.5	28.1	32.2	3.0	63.0	1.5	19.2	
			80	29.9	33.9	4.1	65.0	1.5	20.5	30.6	34.7	2.8	69.8	1.5	20.9	31.9	36.0	3.0	72.0	1.5	21.5	
			90	33.6	37.8	4.2	73.1	1.5	22.7													
	8.0	1.3	50	19.3	23.0	2.8	40.4	1.4	14.1	19.7	23.4	1.9	43.5	1.4	14.4	20.3	24.0	2.0	45.0	1.4	14.7	
			60	22.7	26.5	3.3	48.7	1.4	16.4	23.3	27.1	2.2	52.3	1.4	16.7	24.1	28.0	2.3	54.0	1.4	17.1	
			70	25.8	29.7	2.8	57.1	1.4	18.4	28.0	32.0	4.1	60.7	1.4	19.7	28.8	32.8	3.7	62.8	1.4	20.1	
			80	29.7	33.7	3.4	65.1	1.4	20.9	31.9	36.0	3.9	69.3	1.4	22.2	31.3	35.3	2.4	72.2	1.4	21.7	
			90	34.1	38.1	3.5	72.9	1.4	23.7	36.1	40.1	4.0	77.9	1.4	24.9							
110	4.0	0.3	50	17.2	22.0	2.2	41.5	1.8	9.5	17.9	22.8	2.3	44.1	1.8	9.8	18.1	23.0	2.5	45.5	1.8	9.8	
			60	20.2	25.2	2.6	49.9	1.9	10.9	20.8	25.9	2.8	53.1	1.9	11.2	21.7	26.8	3.3	54.6	1.9	11.5	
			70	23.5	28.7	3.2	58.3	1.9	12.4	24.2	29.4	3.2	61.9	1.9	12.7	25.2	30.5	3.2	63.7	1.9	13.1	
			80	26.1	31.4	3.1	66.9	1.9	13.6	28.1	33.4	3.6	70.6	2.0	14.4	29.0	34.4	4.4	72.7	2.0	14.7	
			90	31.0	36.4	3.9	74.5	2.0	15.8													
	6.0	0.7	50	17.4	22.0	2.2	41.4	1.8	9.9	18.1	22.8	2.6	44.0	1.8	10.2	18.4	23.2	2.4	45.4	1.8	10.3	
			60	20.3	25.1	2.5	49.9	1.8	11.4	21.7	26.6	2.8	52.8	1.8	12.1	22.4	27.4	2.9	54.4	1.8	12.3	
			70	23.2	28.2	2.9	58.4	1.8	12.8	24.5	29.4	2.7	61.9	1.8	13.4	25.4	30.5	3.2	63.6	1.8	13.8	
			80	26.7	31.7	3.4	66.6	1.8	14.5	29.1	34.3	5.2	70.3	1.9	15.7	29.2	34.4	3.4	72.7	1.9	15.7	
			90	28.6	33.7	2.5	75.6	1.9	15.4													
	8.0	1.2	50	16.8	21.4	1.9	41.6	1.7	9.7	18.4	23.0	2.2	43.9	1.8	10.5	18.9	23.7	3.1	45.3	1.8	10.7	
			60	20.6	25.4	2.6	49.7	1.8	11.7	20.9	25.6	2.5	53.1	1.8	11.8	22.5	27.3	2.8	54.4	1.8	12.6	
			70	23.6	28.4	2.9	58.2	1.8	13.2	24.9	29.9	2.9	61.7	1.8	13.9	26.1	31.1	3.8	63.5	1.8	14.4	
			80	23.4	28.2	1.6	68.3	1.8	13.2	28.4	33.4	3.0	70.5	1.8	15.7	29.8	34.9	3.9	72.5	1.8	16.3	
			90	31.0	36.1	4.2	74.4	1.8	17.0													

* Extended Range - Anti-freeze required
 ■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 025 - Part Load (Cooling)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4 GPM						6 GPM						8 GPM					
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER
50	4.0	0.4	50																		
			60																		
			70	22.3	23.7	1.4	58.8	0.5	45.5	23.5	24.9	1.4	62.2	0.5	47.5	24.1	25.6	1.4	64.0	0.5	47.9
			80	25.5	26.9	1.5	67.2	0.5	52.1	26.8	28.2	1.5	71.0	0.5	54.6	27.6	29.0	1.5	73.1	0.5	55.3
			90	28.8	30.1	1.6	75.6	0.5	59.4	30.3	31.7	1.6	79.8	0.5	62.4	31.2	32.5	1.6	82.2	0.5	63.3
			50	16.7	18.1	1.1	41.7	0.5	36.1	17.5	18.9	1.2	44.2	0.5	37.6	18.0	19.4	1.1	45.5	0.5	38.1
	6.0	0.9	60	19.6	20.9	1.2	50.2	0.5	43.0	20.6	21.9	1.2	53.2	0.5	45.1	21.2	22.5	1.2	54.7	0.5	45.7
			70	22.6	23.9	1.3	58.7	0.4	51.0	23.9	25.2	1.4	62.0	0.4	53.8	24.5	25.9	1.4	63.9	0.5	54.5
			80	25.9	27.2	1.5	67.0	0.4	60.1	27.3	28.6	1.5	70.9	0.4	63.7	28.1	29.4	1.5	73.0	0.4	64.8
			90	29.3	30.5	1.6	75.3	0.4	70.6	30.9	32.1	1.6	79.6	0.4	75.3	31.8	33.0	1.6	82.0	0.4	76.9
			50	16.6	18.1	1.1	41.7	0.5	34.1	17.6	19.0	1.1	44.2	0.5	38.6	18.1	19.5	1.1	45.5	0.5	38.7
			60	19.7	21.0	1.2	50.2	0.4	44.5	20.7	22.0	1.3	53.1	0.4	46.8	21.3	22.6	1.3	54.7	0.4	47.5
	8.0	1.4	70	22.8	24.1	1.3	58.6	0.4	53.5	24.0	25.2	1.2	62.0	0.4	56.7	24.7	26.0	1.4	63.8	0.4	57.7
			80	26.1	27.3	1.4	66.9	0.4	64.2	27.6	28.8	1.4	70.8	0.4	68.7	28.4	29.6	1.5	72.9	0.4	70.1
			90	29.6	30.7	1.6	75.2	0.4	77.0	31.3	32.4	1.6	79.5	0.4	83.2	32.2	33.3	1.6	81.9	0.4	85.4
70	4.0	0.4	50	15.2	17.0	1.1	42.4	0.7	21.9	15.9	17.8	1.2	44.7	0.7	22.6	16.3	18.2	1.1	45.9	0.7	22.8
			60	17.9	19.7	1.3	51.1	0.7	25.3	18.7	20.6	1.3	53.8	0.7	26.2	19.2	21.1	1.2	55.2	0.7	26.4
			70	20.7	22.6	1.4	59.7	0.7	28.9	21.7	23.6	1.5	62.8	0.7	30.0	22.2	24.2	1.5	64.4	0.7	30.3
			80	23.6	25.6	1.5	68.2	0.7	32.7	24.8	26.8	1.6	71.7	0.7	34.0	25.5	27.4	1.6	73.6	0.7	34.4
			90	26.7	28.6	1.6	76.6	0.7	36.7	28.0	30.0	1.7	80.6	0.7	38.3						
			50	15.4	17.2	1.1	42.4	0.7	22.7	16.1	17.9	1.2	44.7	0.7	23.5	16.5	18.3	1.1	45.9	0.7	23.8
	6.0	0.8	60	18.1	19.9	1.3	51.0	0.7	26.5	19.0	20.8	1.3	53.7	0.7	27.6	19.4	21.3	1.2	55.2	0.7	27.9
			70	21.0	22.8	1.4	59.5	0.7	30.6	22.0	23.9	1.5	62.7	0.7	31.9	22.6	24.5	1.5	64.3	0.7	32.4
			80	24.0	25.9	1.5	68.0	0.7	35.1	25.3	27.1	1.6	71.6	0.7	36.8	25.9	27.8	1.6	73.5	0.7	37.3
			90	27.2	29.0	1.6	76.3	0.7	40.0	28.6	30.4	1.6	80.4	0.7	42.0						
			50	15.3	17.2	1.1	42.4	0.7	22.1	16.0	17.9	1.1	44.7	0.7	22.8	16.5	18.4	1.1	45.9	0.7	23.1
			60	18.2	20.0	1.3	50.9	0.7	26.8	19.1	20.9	1.3	53.7	0.7	28.0	19.6	21.4	1.4	55.1	0.7	28.3
	8.0	1.3	70	21.1	22.9	1.4	59.5	0.7	31.3	22.2	24.0	1.5	62.6	0.7	32.7	22.8	24.7	1.5	64.3	0.7	33.2
			80	24.2	26.0	1.5	67.9	0.7	36.1	25.5	27.3	1.6	71.5	0.7	38.0	26.2	28.0	1.6	73.4	0.7	38.6
			90	27.4	29.2	1.6	76.2	0.7	41.5	28.9	30.7	1.6	80.3	0.7	43.8						
90	4.0	0.4	50	13.9	16.1	1.2	43.1	0.9	15.6	14.5	16.7	1.3	45.2	0.9	16.0	14.8	17.1	1.3	46.3	0.9	16.2
			60	16.4	18.7	1.3	51.8	0.9	18.0	17.1	19.4	1.4	54.3	0.9	18.6	17.5	19.8	1.4	55.6	0.9	18.7
			70	19.0	21.3	1.5	60.5	0.9	20.5	19.9	22.3	1.6	63.4	0.9	21.2	20.3	22.8	1.6	64.9	0.9	21.4
			80	21.7	24.1	1.6	69.1	0.9	23.1	22.8	25.2	1.7	72.4	1.0	23.9	23.3	25.7	1.7	74.2	1.0	24.2
			90	25.1	27.4	1.7	77.4	0.9	28.0	25.7	28.2	1.8	81.4	1.0	26.8						
			50	14.0	16.2	1.2	43.0	0.9	16.0	14.6	16.9	1.2	45.1	0.9	16.5	15.0	17.2	1.3	46.3	0.9	16.7
	6.0	0.8	60	16.6	18.8	1.3	51.7	0.9	18.6	17.3	19.6	1.4	54.2	0.9	19.3	17.7	20.0	1.4	55.6	0.9	19.5
			70	19.3	21.6	1.5	60.4	0.9	21.4	20.2	22.5	1.6	63.3	0.9	22.2	20.6	23.0	1.6	64.8	0.9	22.5
			80	22.1	24.4	1.6	68.9	0.9	24.4	23.1	25.5	1.7	72.3	0.9	25.3	23.7	26.1	1.7	74.1	0.9	25.7
			90	25.6	27.8	1.7	77.2	0.9	30.0	26.2	28.6	1.8	81.2	0.9	28.6						
			50	14.0	16.2	1.2	43.1	0.9	15.7	14.5	16.8	1.2	45.2	0.9	16.2	14.6	16.9	1.3	46.4	0.9	16.1
			60	16.7	18.9	1.4	51.7	0.9	19.0	17.4	19.7	1.4	54.2	0.9	19.5	17.8	20.1	1.4	55.6	0.9	19.7
	8.0	1.3	70	19.4	21.7	1.5	60.3	0.9	21.7	20.3	22.6	1.6	63.2	0.9	22.6	20.8	23.1	1.6	64.8	0.9	22.9
			80	22.2	24.6	1.6	68.9	0.9	24.8	23.3	25.7	1.6	72.2	0.9	25.9	23.9	26.3	1.7	74.0	0.9	26.3
			90	25.8	28.0	1.7	77.1	0.8	30.8	26.4	28.8	1.7	81.1	0.9	29.4						
110	4.0	0.3	50	12.6	15.3	1.3	43.8	1.1	11.0	13.1	15.8	1.3	45.7	1.2	11.3	13.3	16.1	1.3	46.7	1.2	11.4
			60	14.7	17.5	1.4	52.7	1.2	12.7	15.5	18.3	1.5	54.9	1.2	13.2	15.8	18.7	1.5	56.1	1.2	13.4
			70	17.1	20.0	1.5	61.4	1.2	14.6	18.0	20.9	1.7	64.0	1.2	15.2	18.4	21.3	1.7	65.4	1.2	15.4
			80	17.7	20.6	1.1	71.1	1.2	15.0	20.6	23.6	1.8	73.1	1.2	17.2	21.1	24.1	1.8	74.7	1.2	17.4
			90	22.8	25.6	1.8	78.6	1.1	20.1												
			50	12.6	15.3	1.3	43.7	1.1	11.1	13.2	15.9	1.3	45.6	1.1	11.6	13.4	16.2	1.3	46.7	1.1	11.8
	6.0	0.7	60	15.0	17.8	1.4	52.5	1.1	13.2	15.6	18.4	1.5	54.8	1.1	13.7	16.0	18.8	1.5	56.0	1.2	13.9
			70	17.4	20.2	1.5	61.3	1.1	15.2	18.3	21.1	1.6	63.9	1.2	15.8	18.7	21.5	1.7	65.3	1.2	16.0
			80	20.0	22.8	1.7	70.0	1.2	17.3	21.0	23.9	1.8	73.0	1.2	18.1	21.4	24.4	1.8	74.6	1.2	18.3
			90	19.8	22.5	1.2	80.1	1.1	18.3												
			50	12.6	15.3	1.2	43.7	1.1	11.3	13.2	15.9	1.2	45.6	1.1	11.7	13.4	16.2	1.3	46.7	1.2	11.6
			60	15.0	17.8	1.4	52.5	1.1	13.4	15.7	18.5	1.5	54.8	1.1	13.8	16.1	18.9	1.5	56.0	1.1	14.0
	8.0	1.2	70	17.5	20.3	1.5	61.3	1.1	15.4	18.4	21.2	1.6	63.9	1.1	16.1	18.8	21.7	1.7	65.3	1.2	16.3
			80	20.1	23.0	1.6	69.9	1.1	17.6	21.1	24.0	1.8	72.9	1.1	18.4	21.6	24.5	1.8	74.6	1.2	18.7
			90	20.1	22.7	1.2	79.9	1.1	18.8												

* Extended Range - Anti-freeze required

■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 025 - Full Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4 GPM						6 GPM						8 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	4.0	0.5	60	18.3	15.6	0.4	69.1	1.0	5.5	19.8	17.1	0.5	66.6	1.0	6.1						
			80	18.5	15.1	0.4	89.3	1.3	4.3	18.5	15.2	0.4	86.2	1.2	4.4	18.6	15.3	0.4	84.7	1.2	4.5
			100	17.3	13.2	0.3	108.7	1.6	3.2	17.3	13.3	0.3	105.8	1.6	3.3	17.8	13.7	0.3	104.5	1.6	3.4
			120	17.7	12.3	0.4	129.0	2.1	2.5	17.7	12.5	0.4	126.0	2.1	2.5	17.8	12.5	0.3	124.5	2.0	2.6
	6.0	1.0	60	20.4	17.6	0.5	70.2	1.0	6.0	20.2	17.5	0.5	66.7	1.0	6.2						
			80	18.8	15.4	0.4	89.5	1.3	4.4	19.4	16.1	0.4	86.5	1.2	4.6	19.6	16.3	0.4	84.9	1.2	4.7
			100	18.3	14.0	0.3	109.2	1.6	3.3	18.0	13.9	0.3	106.0	1.6	3.4	18.4	14.3	0.3	104.6	1.6	3.5
			120	18.4	12.9	0.4	129.3	2.1	2.5	18.4	13.1	0.4	126.2	2.1	2.6	18.0	12.7	0.3	124.6	2.0	2.6
	8.0	1.6	60	20.2	17.4	0.5	70.1	1.0	5.9	20.3	17.6	0.5	66.8	1.0	6.2						
			80	19.6	16.1	0.4	89.8	1.3	4.5	19.3	15.9	0.4	86.5	1.2	4.5	19.6	16.2	0.4	84.9	1.2	4.6
			100	18.7	14.4	0.4	109.4	1.6	3.4	18.6	14.5	0.4	106.3	1.6	3.4	18.7	14.6	0.4	104.7	1.6	3.5
			120	18.8	13.2	0.4	129.5	2.1	2.6	18.8	13.4	0.4	126.4	2.1	2.7	18.9	13.5	0.4	124.8	2.1	2.7
50	4.0	0.4	60	25.5	22.5	0.8	72.7	1.0	7.2	22.9	20.2	0.6	67.6	1.0	7.0	25.5	22.7	0.8	66.4	1.0	7.9
			80	23.9	20.3	0.6	92.0	1.3	5.3	24.0	20.5	0.6	88.0	1.3	5.5	24.1	20.7	0.6	86.1	1.3	5.6
			100	23.2	18.7	0.6	111.7	1.7	4.0	23.3	18.9	0.6	107.8	1.6	4.2	23.9	19.5	0.6	106.0	1.6	4.4
			120	23.6	17.7	0.6	131.9	2.2	3.2	23.5	17.9	0.6	127.9	2.1	3.3	23.6	18.0	0.6	126.0	2.1	3.3
	6.0	0.9	60	27.1	24.1	0.8	73.6	1.1	7.5	27.6	24.7	0.9	69.2	1.0	8.2	27.4	24.5	0.9	66.8	1.0	8.3
			80	26.0	22.3	0.7	93.1	1.4	5.6	26.4	22.7	0.7	88.8	1.3	6.0	25.9	22.4	0.7	86.5	1.3	6.0
			100	24.7	20.1	0.6	112.5	1.7	4.3	25.4	20.9	0.7	108.5	1.6	4.5	24.7	20.3	0.6	106.2	1.6	4.5
			120	24.6	18.6	0.7	132.4	2.2	3.3	23.7	18.0	0.6	128.0	2.1	3.3	24.7	19.1	0.6	126.3	2.1	3.5
	8.0	1.5	60	27.7	24.6	0.9	73.9	1.1	7.6	28.7	25.7	1.0	69.6	1.0	8.3	28.3	25.4	0.9	67.1	1.0	8.5
			80	26.8	22.9	0.8	93.4	1.4	5.7	26.6	22.9	0.7	88.9	1.3	6.0	26.3	22.7	0.7	86.6	1.3	6.0
			100	23.6	19.0	0.6	111.9	1.7	4.1	24.7	20.2	0.6	108.3	1.7	4.4	25.5	21.0	0.7	106.4	1.6	4.6
			120	25.2	19.1	0.7	132.7	2.2	3.3	25.3	19.5	0.7	128.5	2.1	3.5	25.4	19.7	0.7	126.4	2.1	3.6
70	4.0	0.4	60	33.1	29.9	1.2	76.6	1.1	8.8	33.0	30.0	1.2	71.0	1.0	9.6	33.9	31.0	1.3	68.5	1.0	10.2
			80	30.8	26.9	1.0	95.5	1.4	6.4	32.7	28.9	1.1	91.0	1.3	7.1	32.2	28.5	1.1	88.1	1.3	7.2
			100	30.2	25.3	1.0	115.2	1.8	5.0	31.7	27.0	1.0	110.7	1.7	5.5	32.0	27.4	1.0	108.1	1.7	5.6
			120	30.3	24.0	1.1	135.3	2.3	3.9	30.3	24.4	1.0	130.2	2.2	4.1	30.4	24.6	1.0	127.7	2.1	4.2
	6.0	0.8	60	35.7	32.4	1.4	77.8	1.1	9.3	35.4	32.4	1.4	71.8	1.0	10.1	35.7	32.8	1.5	68.9	1.0	10.7
			80	33.5	29.5	1.2	96.8	1.4	6.8	34.1	30.2	1.2	91.4	1.4	7.4	34.4	30.7	1.2	88.6	1.3	7.6
			100	33.0	28.0	1.1	116.7	1.8	5.4	31.6	26.8	1.0	110.6	1.7	5.4	32.4	27.7	1.1	108.2	1.7	5.7
			120	31.5	25.2	1.2	136.0	2.3	4.1	31.4	25.3	1.1	130.6	2.2	4.2	31.9	26.0	1.1	128.1	2.1	4.4
	8.0	1.4	60	36.2	32.9	1.4	78.1	1.1	9.3	37.2	34.1	1.5	72.4	1.0	10.5	37.4	34.5	1.6	69.3	1.0	11.0
			80	34.6	30.5	1.2	97.4	1.5	7.0	35.9	32.0	1.3	92.0	1.4	7.6	35.0	31.2	1.3	88.8	1.3	7.7
			100	32.7	27.6	1.1	116.5	1.8	5.3	33.7	28.9	1.2	111.3	1.7	5.7	34.0	29.3	1.2	108.6	1.7	5.9
			120	32.3	25.9	1.2	136.4	2.3	4.1	32.2	26.1	1.1	130.9	2.2	4.3	32.7	26.7	1.2	128.3	2.1	4.5
90	4.0	0.4	60	40.7	37.4	1.8	80.4	1.2	10.4	42.9	39.8	2.0	74.3	1.0	12.0	43.1	40.2	2.1	70.8	1.0	12.8
			80	41.5	37.2	1.8	100.8	1.5	8.1	40.3	36.3	1.7	93.5	1.4	8.5	40.6	36.7	1.7	90.2	1.3	8.9
			100	39.5	34.2	1.7	119.9	1.9	6.2	39.1	34.1	1.6	113.1	1.8	6.5	38.9	34.1	1.5	109.8	1.7	6.7
			120							38.3	32.2	1.7	132.9	2.2	5.2	38.2	32.3	1.6	129.7	2.1	5.3
	6.0	0.8	60	44.6	41.1	2.1	82.3	1.2	11.0	46.3	43.2	2.3	75.4	1.1	12.8	45.8	42.9	2.3	71.4	1.0	13.5
			80	42.9	38.6	1.9	101.6	1.5	8.3	43.1	39.1	1.9	94.4	1.4	9.0	43.5	39.6	1.9	90.9	1.4	9.4
			100																		
			120																		
	8.0	1.3	60	45.8	42.4	2.2	82.9	1.2	11.3	48.0	44.8	2.5	76.0	1.1	13.3	47.9	45.0	2.5	72.0	1.0	14.2
			80																		
			100																		
			120																		

* Extended Range - Anti-freeze required

■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 025 - Part Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4 GPM						6 GPM						8 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	4.0	0.5	60	13.7	11.9	0.3	66.9	0.7	6.0												
			80	12.9	10.8	0.2	86.5	0.9	4.3	13.0	10.9	0.2	84.4	0.9	4.4	13.1	10.9	0.2	83.3	0.9	4.4
			100	12.2	9.5	0.2	106.1	1.1	3.2	12.2	9.6	0.2	104.1	1.1	3.2	12.3	9.7	0.2	103.1	1.1	3.3
			120	11.6	8.3	0.2	125.9	1.5	2.3	11.7	8.4	0.2	123.9	1.5	2.4	11.7	8.4	0.2	123.0	1.4	2.4
	6.0	1.0	60	14.2	12.4	0.3	67.1	0.7	6.1	14.3	12.5	0.3	64.8	0.7	6.3						
			80	13.4	11.2	0.2	86.7	0.9	4.4	13.5	11.3	0.2	84.5	0.9	4.5	13.5	11.3	0.2	83.4	0.9	4.5
			100	12.5	9.9	0.2	106.3	1.1	3.2	12.6	10.0	0.2	104.2	1.1	3.3	12.7	10.0	0.2	103.2	1.1	3.3
			120	12.0	8.6	0.2	126.1	1.5	2.4	12.0	8.6	0.2	124.0	1.5	2.4	12.0	8.7	0.2	123.0	1.5	2.4
	8.0	1.6	60	14.5	12.6	0.3	67.2	0.7	6.1	14.6	12.8	0.3	64.9	0.7	6.3						
			80	13.6	11.4	0.2	86.8	0.9	4.4	13.7	11.5	0.2	84.6	0.9	4.5	13.7	11.5	0.2	83.4	0.9	4.6
			100	12.8	10.0	0.2	106.4	1.1	3.3	12.8	10.1	0.2	104.3	1.1	3.3	12.9	10.2	0.2	103.2	1.1	3.4
			120	11.9	8.5	0.2	126.0	1.5	2.3	12.0	8.6	0.2	124.0	1.5	2.4	12.2	8.8	0.2	123.1	1.5	2.4
50	4.0	0.4	60	18.6	16.7	0.4	69.3	0.7	7.8	18.7	16.9	0.4	66.2	0.7	8.3	18.8	17.0	0.4	64.7	0.7	8.5
			80	17.7	15.3	0.3	88.9	0.9	5.6	17.8	15.5	0.3	86.0	0.9	5.8	17.9	15.5	0.4	84.5	0.9	5.9
			100	16.7	13.8	0.3	108.4	1.2	4.2	16.9	14.0	0.3	105.7	1.1	4.3	16.9	14.1	0.3	104.3	1.1	4.4
			120	16.0	12.3	0.3	128.1	1.5	3.1	16.1	12.5	0.3	125.4	1.5	3.2	16.1	12.5	0.3	124.1	1.5	3.2
	6.0	0.9	60	19.4	17.5	0.5	69.7	0.7	8.1	19.6	17.7	0.5	66.5	0.7	8.6	19.7	17.9	0.5	64.9	0.7	8.8
			80	18.4	16.0	0.4	89.2	0.9	5.8	18.6	16.2	0.4	86.2	0.9	6.0	18.6	16.3	0.4	84.7	0.9	6.1
			100	17.4	14.4	0.3	108.8	1.2	4.3	17.5	14.6	0.3	105.9	1.2	4.5	17.6	14.7	0.3	104.4	1.1	4.5
			120	16.4	12.7	0.3	128.3	1.5	3.2	16.5	12.9	0.3	125.6	1.5	3.3	16.7	13.1	0.3	124.2	1.5	3.3
	8.0	1.5	60	19.9	17.9	0.5	69.9	0.7	8.2	20.1	18.2	0.5	66.7	0.7	8.7	20.2	18.3	0.5	65.0	0.7	8.9
			80	18.8	16.4	0.4	89.5	0.9	5.9	19.0	16.6	0.4	86.4	0.9	6.1	19.1	16.7	0.4	84.8	0.9	6.2
			100	17.7	14.7	0.3	108.9	1.2	4.4	17.9	14.9	0.3	106.0	1.2	4.5	18.0	15.0	0.3	104.5	1.2	4.6
			120	16.7	13.0	0.3	128.5	1.5	3.2	16.8	13.1	0.3	125.7	1.5	3.3	16.9	13.2	0.3	124.3	1.5	3.4
70	4.0	0.4	60	24.5	22.6	0.7	72.3	0.7	10.1	24.8	22.9	0.7	68.3	0.7	11.0	24.9	23.1	0.8	66.2	0.6	11.4
			80	23.3	20.8	0.6	91.7	1.0	7.1	23.6	21.1	0.6	87.9	0.9	7.5	23.7	21.3	0.6	86.0	0.9	7.7
			100	22.0	18.9	0.5	111.1	1.2	5.3	22.2	19.1	0.5	107.5	1.2	5.5	22.3	19.3	0.5	105.6	1.2	5.6
			120	20.8	16.9	0.5	130.5	1.5	4.0	21.0	17.2	0.5	127.1	1.5	4.1	21.1	17.3	0.5	125.3	1.5	4.2
	6.0	0.8	60	25.7	23.7	0.8	72.9	0.7	10.5	26.1	24.2	0.8	68.7	0.7	11.4	26.3	24.4	0.8	66.6	0.6	11.9
			80	24.4	21.8	0.6	92.3	1.0	7.4	24.7	22.2	0.7	88.3	0.9	7.8	24.9	22.4	0.7	86.2	0.9	8.0
			100	22.9	19.7	0.6	111.5	1.2	5.5	23.1	20.1	0.6	107.8	1.2	5.7	23.3	20.2	0.6	105.9	1.2	5.8
			120	21.6	17.6	0.5	130.9	1.5	4.1	21.8	17.9	0.5	127.3	1.5	4.3	21.9	18.1	0.5	125.5	1.5	4.3
	8.0	1.4	60	26.5	24.4	0.8	73.2	0.7	10.6	26.8	24.9	0.8	68.9	0.7	11.7	27.0	25.2	0.9	66.8	0.7	12.2
			80	25.0	22.4	0.7	92.6	1.0	7.5	25.3	22.8	0.7	88.5	0.9	7.9	25.5	23.0	0.7	86.4	0.9	8.1
			100	23.4	20.2	0.6	111.8	1.2	5.5	23.7	20.5	0.6	108.0	1.2	5.8	23.8	20.7	0.6	106.0	1.2	5.9
			120	22.0	18.0	0.6	131.1	1.6	4.1	22.2	18.3	0.6	127.5	1.5	4.3	22.3	18.5	0.6	125.6	1.5	4.4
90	4.0	0.4	60	31.1	29.1	1.1	75.6	0.7	12.6	31.5	29.7	1.1	70.5	0.7	14.2	31.8	30.0	1.2	67.9	0.6	15.1
			80	29.5	26.9	0.9	94.8	1.0	8.8	29.9	27.4	0.9	90.0	0.9	9.5	30.1	27.7	1.0	87.6	0.9	9.8
			100	27.7	24.4	0.8	114.0	1.2	6.5	28.1	24.9	0.8	109.4	1.2	6.9	28.3	25.2	0.8	107.1	1.2	7.1
			120	26.0	21.9	0.8	133.2	1.6	4.9	26.3	22.4	0.8	128.9	1.5	5.1	26.5	22.6	0.8	126.7	1.5	5.2
	6.0	0.8	60	32.8	30.8	1.2	76.4	0.7	13.2	33.3	31.5	1.3	71.1	0.6	15.0	33.6	31.8	1.3	68.4	0.6	16.1
			80	30.9	28.3	1.0	95.5	1.0	9.1	31.4	28.9	1.0	90.5	0.9	9.9	31.7	29.2	1.1	88.0	0.9	10.3
			100							29.3	26.1	0.9	109.9	1.2	7.1	29.5	26.4	0.9	107.4	1.2	7.3
			120																		
	8.0	1.3	60	33.7	31.7	1.3	76.9	0.7	13.5	34.3	32.5	1.3	71.4	0.7	15.4	34.6	32.9	1.4	68.6	0.6	16.5
			80																		
			100																		
			120																		

* Extended Range - Anti-freeze required

■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 035 - Full Load (Cooling)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4.5 GPM						6.75 GPM						9 GPM					
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER
50	4.5	0.5	50	30.3	34.5	4.2	36.6	1.4	21.2	32.5	36.8	4.5	40.4	1.5	22.3	33.8	38.1	4.7	42.5	1.5	22.8
			60	34.8	39.2	4.9	44.6	1.5	23.6	37.5	42.0	5.3	48.9	1.5	24.8	39.1	43.6	5.5	51.3	1.5	25.3
			70	39.8	44.3	5.7	52.3	1.5	26.0	42.8	47.5	6.1	57.3	1.6	27.2	44.7	49.5	6.3	60.1	1.6	27.9
			80	44.8	49.6	6.4	60.1	1.6	28.3	48.7	53.5	6.9	65.6	1.6	30.0	50.8	55.8	7.1	68.7	1.7	30.7
	6.8	1.1	90	50.4	55.3	7.2	67.5	1.6	30.9	54.7	59.7	7.6	73.7	1.7	32.6	57.2	62.3	7.8	77.2	1.7	33.3
			50	30.8	34.8	4.1	36.4	1.4	22.6	33.1	37.2	4.4	40.3	1.4	23.9	34.4	38.7	4.6	42.4	1.4	24.5
			60	35.5	39.7	4.8	44.3	1.4	25.5	38.3	42.6	5.2	48.7	1.4	26.9	40.0	44.3	5.4	51.1	1.5	27.6
			70	40.6	45.0	5.6	52.0	1.4	28.3	43.9	48.4	6.0	57.0	1.5	29.8	45.9	50.4	6.2	59.8	1.5	30.7
	9.0	1.8	80	45.9	50.4	6.3	59.6	1.5	31.1	50.0	54.5	6.7	65.2	1.5	33.2	52.4	57.0	6.9	68.3	1.5	34.1
			90	51.7	56.3	6.9	66.9	1.5	34.2	56.4	61.1	7.3	73.2	1.6	36.3	59.1	63.9	7.5	76.8	1.6	37.3
			50	31.0	35.0	4.1	36.3	1.3	23.1	33.4	37.5	4.4	40.2	1.4	24.6	34.8	38.9	4.6	42.3	1.4	25.2
			60	35.8	39.9	4.8	44.2	1.4	26.2	38.7	42.9	5.2	48.6	1.4	27.9	40.4	44.7	5.4	51.0	1.4	28.6
70	4.5	0.5	70	41.1	45.3	5.5	51.8	1.4	29.4	44.5	48.8	6.0	56.8	1.4	31.1	46.5	51.0	6.2	59.7	1.5	32.0
			80	46.5	50.8	6.2	59.3	1.4	32.4	50.7	55.2	6.6	65.0	1.5	34.7	53.2	57.8	6.9	68.2	1.5	35.8
			90	52.4	56.8	6.8	66.7	1.5	35.8	57.3	61.9	7.2	73.0	1.5	38.2	60.1	64.8	7.5	76.6	1.5	39.2
			50	28.2	33.2	4.4	37.5	1.8	16.0	30.2	35.3	4.8	41.1	1.8	16.8	31.3	36.5	5.0	43.1	1.8	17.2
	6.8	1.0	60	32.6	37.8	5.2	45.6	1.8	17.9	35.0	40.3	5.6	49.7	1.9	18.9	36.3	41.7	5.9	52.0	1.9	19.3
			70	37.2	42.6	6.0	53.5	1.9	19.8	40.0	45.5	6.5	58.2	1.9	20.8	41.5	47.2	6.7	60.8	1.9	21.3
			80	42.1	47.7	6.8	61.3	1.9	21.8	45.4	51.1	7.3	66.5	2.0	23.1	47.3	53.1	7.6	69.5	2.0	23.8
			90	47.3	53.0	7.6	68.9	2.0	24.0	51.1	57.0	8.1	74.8	2.0	25.4	53.3	59.3	8.4	78.1	2.0	26.1
	9.0	1.6	50	28.7	33.5	4.4	37.3	1.7	16.9	30.8	35.7	4.7	40.9	1.7	17.9	31.9	37.0	4.9	42.9	1.7	18.3
			60	33.2	38.2	5.1	45.3	1.7	19.2	35.7	40.8	5.5	49.5	1.8	20.3	37.2	42.3	5.8	51.8	1.8	20.8
			70	38.0	43.1	5.9	53.1	1.8	21.5	41.0	46.2	6.4	57.9	1.8	22.7	42.6	48.0	6.6	60.5	1.8	23.4
			80	43.1	48.3	6.7	60.8	1.8	23.8	46.7	52.0	7.2	66.2	1.8	25.5	48.7	54.2	7.4	69.1	1.9	26.3
90	4.5	0.4	90	48.6	53.9	7.5	68.3	1.8	26.5	52.7	58.2	7.9	74.3	1.9	28.3	55.1	60.7	8.1	77.7	1.9	29.1
			50	28.9	33.7	4.4	37.2	1.7	17.3	31.0	35.9	4.7	40.9	1.7	18.3	32.2	37.2	4.9	42.9	1.7	18.8
			60	33.5	38.4	5.1	45.2	1.7	19.7	36.0	41.0	5.4	49.4	1.7	20.9	37.6	42.7	5.7	51.7	1.7	21.5
			70	38.4	43.4	5.9	53.0	1.7	22.2	41.5	46.6	6.3	57.7	1.8	23.6	43.2	48.4	6.5	60.4	1.8	24.3
	6.8	1.0	80	43.6	48.7	6.6	60.6	1.8	24.8	47.3	52.5	7.1	66.0	1.8	26.6	49.5	54.8	7.3	69.0	1.8	27.5
			90	49.2	54.4	7.4	68.1	1.8	27.7	53.5	58.9	7.8	74.1	1.8	29.7	56.0	61.5	8.0	77.5	1.8	30.6
			50	26.0	32.1	4.7	38.5	2.2	11.8	27.7	33.9	5.1	41.8	2.2	12.4	28.7	35.0	5.3	43.7	2.3	12.7
			60	30.2	36.5	5.6	46.7	2.3	13.3	32.2	38.6	6.0	50.5	2.3	14.0	33.3	39.9	6.2	52.6	2.3	14.3
	9.0	1.6	70	34.5	41.0	6.5	54.7	2.3	14.8	36.9	43.6	7.0	59.1	2.4	15.6	38.3	45.0	7.2	61.5	2.4	16.0
			80	39.1	45.8	7.4	62.6	2.4	16.5	41.7	48.5	7.8	67.6	2.4	17.4	43.7	50.6	8.1	70.3	2.4	17.9
			90	43.6	50.5	8.3	70.6	2.4	18.1	47.0	54.0	8.7	76.0	2.4	19.2	49.0	56.1	9.0	79.1	2.5	19.8
			50	26.4	32.3	4.6	38.3	2.1	12.4	28.2	34.2	5.0	41.7	2.1	13.1	29.2	35.3	5.2	43.5	2.2	13.5
110	4.5	0.4	60	30.7	36.7	5.5	46.4	2.2	14.2	32.9	39.0	5.9	50.3	2.2	15.0	34.1	40.4	6.1	52.4	2.2	15.4
			70	35.2	41.5	6.4	54.4	2.2	16.0	37.8	44.1	6.8	58.8	2.2	16.9	39.2	45.7	7.1	61.3	2.3	17.4
			80	40.0	46.4	7.2	62.2	2.2	17.9	43.1	49.6	7.7	67.2	2.3	19.1	44.9	51.5	8.0	70.0	2.3	19.8
			90	45.6	52.1	9.0	69.7	2.3	20.1	48.8	55.4	8.5	75.5	2.3	21.4	50.9	57.5	8.8	78.6	2.3	22.1
	6.8	0.9	50	26.6	32.3	4.7	38.3	2.1	12.8	28.4	34.4	5.0	41.6	2.1	13.4	29.5	35.5	5.2	43.5	2.1	13.8
			60	30.9	36.9	5.4	46.3	2.1	14.5	33.2	39.3	5.9	50.2	2.1	15.4	34.4	40.6	6.1	52.4	2.2	15.9
			70	35.6	41.7	6.3	54.2	2.2	16.5	38.2	44.5	6.8	58.7	2.2	17.5	39.7	46.0	7.0	61.2	2.2	18.1
			80	40.5	46.7	7.1	62.0	2.2	18.6	43.7	50.0	7.6	67.0	2.2	19.9	45.6	52.0	7.9	69.8	2.2	20.7
	9.0	1.5	90	45.8	52.1	7.9	69.6	2.2	20.9	49.5	55.9	8.4	75.3	2.2	22.4	51.7	58.2	8.7	78.5	2.2	23.2
			50	23.7	31.2	5.0	39.5	2.8	8.6	25.0	32.7	5.3	42.6	2.8	8.9	25.8	33.6	5.6	44.3	2.8	9.1
			60	27.3	35.1	5.9	47.9	2.8	9.6	29.1	37.0	6.4	51.4	2.9	10.2	30.1	38.2	6.6	53.3	2.9	10.4
			70	31.4	39.4	7.0	56.1	2.9	10.9	33.5	41.7	7.5	60.1	2.9	11.5	34.8	43.0	7.8	62.3	2.9	11.8
130	4.5	0.4	80	35.7	44.0	8.1	64.1	2.9	12.2	38.2	46.6	8.5	68.6	3.0	12.9	39.7	48.2	8.9	71.2	3.0	13.3
			90	40.1	48.5	8.9	72.1	3.0	13.5	43.0	51.6	9.6	77.2	3.0	14.3	44.7	53.4	10.0	80.0	3.0	14.7
			50	24.0	31.4	5.0	39.4	2.7	8.9	25.6	33.0	5.3	42.5	2.7	9.4	26.4	33.9	5.6	44.2	2.7	9.7
			60	27.7	35.3	5.8	47.7	2.7	10.2	29.6	37.3	6.3	51.2	2.8	10.8	30.7	38.5	6.5	53.2	2.8	11.1
	6.8	0.9	70	32.0	39.7	6.8	55.8	2.8	11.6	34.3	42.1	7.3	59.8	2.8	12.3	35.6	43.5	7.6	62.1	2.8	12.7
			80	36.5	44.3	8.0	63.8	2.8	13.1	39.1	47.1	8.3	68.4	2.8	14.0	40.7	48.7	8.6	70.9	2.8	14.4
			90	41.1	49.1	8.7	71.7	2.8	14.6	44.3	52.3	9.3	76.8	2.8	15.7	46.1	54.3	9.6	79.7	2.8	16.2
			50	24.0	31.4	5.0	39.4	2.7	8.9	25.7	33.0	5.4	42.4	2.7	9.6	26.7	34.2	5.6	44.1	2.7	9.9
	9.0	1.5	60	28.1	35.4	5.8	47.6	2.7	10.5	29.9	37.4	6.2	51.2	2.7	11.0	31.0	38.6	6.5	53.1	2.7	11.4
			70	32.2	39.8	6.7	55.7	2.7	11.9	34.6	42.3	7.2	59.7	2.7	12.7	36.0	43.7	7.5	62.0	2.7	13.1
			80	36.8	44.5	7.7	63.6	2.7	13.5	39.6	47.4	8.2	68.2	2.7	14.5	41.3	49.1	8.5	70.8	2.8	15.0
			90	41.6	49.3	8.5	71.5	2.7	15.2	45.0	52.8	9.2	76.6	2.8	16.3	46.8	54.8	9.4	79.5	2.8	17.0

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 035 - Part Load (Cooling)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4.5 GPM						6.75 GPM						9 GPM					
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER
50	4.5	0.5	50							23.5	26.1	1.9	43.1	0.9	26.0	24.2	26.9	2.0	44.7	0.9	26.3
			60	25.8	28.5	2.1	48.6	0.9	28.3	27.3	30.0	2.2	51.9	0.9	29.3	28.2	30.9	2.2	53.8	1.0	29.6
			70	29.6	32.4	2.3	56.8	0.9	31.4	31.4	34.2	2.4	60.7	1.0	32.5	32.3	35.2	2.5	62.8	1.0	32.8
			80	33.6	36.4	2.5	65.1	1.0	34.3	35.6	38.5	2.7	69.4	1.0	35.4	36.7	39.7	2.7	71.8	1.0	35.7
			90	37.7	40.6	2.7	73.2	1.0	36.9	40.0	43.0	2.9	78.1	1.1	38.0						
			50																		
	6.8	1.1	60																		
			70	30.1	32.8	2.3	56.6	0.9	33.4	32.0	34.7	2.4	60.5	0.9	34.7	33.0	35.8	2.5	62.7	0.9	35.0
			80	34.2	37.0	2.5	64.8	0.9	36.6	36.4	39.2	2.6	69.2	1.0	38.0	37.6	40.5	2.7	71.6	1.0	38.3
			90	38.5	41.4	2.7	72.8	1.0	39.7	40.9	43.9	2.9	77.8	1.0	41.0						
			50							24.1	26.6	1.9	42.9	0.9	27.7	24.8	27.4	1.9	44.5	0.9	28.1
			60							28.0	30.7	2.1	51.7	0.9	31.6	28.9	31.6	2.2	53.6	0.9	32.0
	9.0	1.8	70							32.3	35.0	2.4	60.4	0.9	35.4	33.3	36.1	2.5	62.6	0.9	35.8
			80	34.6	37.3	2.5	64.6	0.9	37.6	36.8	39.6	2.6	69.1	0.9	39.0	38.0	40.9	2.7	71.5	1.0	39.3
			90	38.9	41.8	2.7	72.7	1.0	40.8	41.4	44.4	2.9	77.7	1.0	42.1						
			50	20.6	23.6	1.9	40.9	1.1	18.7	21.7	24.7	2.0	43.6	1.1	19.4	22.3	25.4	2.0	45.1	1.1	19.6
			60	24.0	27.1	2.2	49.4	1.1	21.2	25.3	28.4	2.3	52.5	1.1	22.0	26.0	29.2	2.3	54.2	1.2	22.3
			70	27.5	30.7	2.4	57.8	1.2	23.8	29.1	32.3	2.5	61.4	1.2	24.7	29.9	33.2	2.6	63.4	1.2	24.9
70	4.5	0.5	80	31.3	34.5	2.7	66.1	1.2	26.3	33.0	36.4	2.8	70.2	1.2	27.2	34.0	37.4	2.9	72.4	1.2	27.5
			90	35.1	38.5	2.9	74.3	1.2	28.6	37.1	40.6	3.0	79.0	1.3	29.6						
			50	20.9	23.8	1.9	40.8	1.1	19.4	22.0	25.0	2.0	43.5	1.1	20.3	22.6	25.7	2.0	45.0	1.1	20.5
	6.8	1.0	60	24.3	27.4	2.1	49.2	1.1	22.3	25.7	28.8	2.3	52.4	1.1	23.2	26.4	29.6	2.3	54.1	1.1	23.5
			70	28.0	31.1	2.4	57.6	1.1	25.2	29.6	32.8	2.5	61.2	1.1	26.2	30.5	33.7	2.6	63.2	1.1	26.5
			80	31.9	35.0	2.6	65.8	1.1	28.0	33.7	37.0	2.8	70.0	1.2	29.1	34.7	38.1	2.8	72.3	1.2	29.5
	9.0	1.7	90	35.9	39.1	2.8	74.0	1.2	30.7	38.0	41.3	3.0	78.7	1.2	31.9						
			50	21.0	24.0	1.9	40.7	1.1	19.7	22.2	25.2	2.0	43.5	1.1	20.5	22.8	25.8	2.0	45.0	1.1	20.8
			60	24.5	27.5	2.1	49.1	1.1	22.7	25.9	29.0	2.2	52.3	1.1	23.6	26.7	29.8	2.3	54.1	1.1	24.0
			70	28.2	31.3	2.4	57.5	1.1	25.7	29.9	33.0	2.5	61.1	1.1	26.8	30.8	34.0	2.6	63.2	1.1	27.2
			80	32.2	35.3	2.6	65.7	1.1	28.7	34.1	37.3	2.8	69.9	1.1	29.9	35.1	38.4	2.8	72.2	1.2	30.3
			90	36.2	39.5	2.8	73.8	1.1	31.5	38.5	41.8	3.0	78.6	1.2	32.8						
90	4.5	0.5	50	18.9	22.5	2.0	41.6	1.4	13.7	19.8	23.4	2.1	44.2	1.4	14.2	20.3	24.0	2.1	45.5	1.4	14.4
			60	22.1	25.7	2.3	50.2	1.4	15.7	23.2	26.9	2.4	53.2	1.4	16.3	23.7	27.5	2.4	54.7	1.4	16.5
			70	25.4	29.1	2.6	58.7	1.4	17.7	26.7	30.5	2.7	62.1	1.5	18.3	27.4	31.3	2.8	63.9	1.5	18.6
			80	28.8	32.7	2.8	67.2	1.5	19.6	30.3	34.3	2.9	71.0	1.5	20.4	31.1	35.2	3.0	73.1	1.5	20.6
			90	32.4	36.4	3.1	75.5	1.5	21.6	34.1	38.2	3.2	79.8	1.5	22.4						
	6.8	1.0	50	19.2	22.6	2.0	41.5	1.3	14.2	20.1	23.6	2.1	44.1	1.4	14.8	20.6	24.2	2.1	45.4	1.4	15.0
			60	22.4	25.9	2.3	50.1	1.4	16.4	23.5	27.2	2.4	53.0	1.4	17.1	24.2	27.8	2.4	54.6	1.4	17.3
			70	25.8	29.4	2.5	58.5	1.4	18.6	27.2	30.9	2.6	62.0	1.4	19.4	27.9	31.7	2.7	63.8	1.4	19.7
			80	29.4	33.1	2.8	66.9	1.4	20.9	31.0	34.8	2.9	70.8	1.4	21.8	31.8	35.7	2.9	72.9	1.4	22.1
			90	33.1	36.9	3.0	75.2	1.4	23.1												
	9.0	1.6	50	19.3	22.7	2.0	41.5	1.3	14.4	20.2	23.8	2.1	44.0	1.4	15.0	20.8	24.3	2.1	45.4	1.4	15.2
			60	22.5	26.1	2.3	50.0	1.4	16.7	23.7	27.3	2.4	53.0	1.4	17.4	24.4	28.0	2.4	54.6	1.4	17.7
			70	26.0	29.6	2.5	58.5	1.4	19.0	27.4	31.1	2.6	61.9	1.4	19.9	28.2	31.9	2.7	63.7	1.4	20.2
			80	29.6	33.4	2.8	66.8	1.4	21.4	31.3	35.1	2.9	70.7	1.4	22.3	32.2	36.0	2.9	72.8	1.4	22.7
			90	33.4	37.2	3.0	75.1	1.4	23.8												
110	4.5	0.4	50	17.1	21.5	2.2	42.4	1.7	9.8	17.9	22.3	2.3	44.7	1.8	10.2	18.3	22.7	2.3	46.0	1.8	10.3
			60	20.0	24.5	2.5	51.1	1.8	11.3	20.9	25.5	2.5	53.8	1.8	11.7	21.4	26.0	2.6	55.3	1.8	11.9
			70	23.1	27.7	2.7	59.7	1.8	12.8	24.2	28.9	2.8	62.8	1.8	13.3	24.7	29.5	2.9	64.5	1.8	13.5
			80	26.3	31.0	3.1	68.3	1.8	14.4	27.5	32.3	3.2	71.8	1.8	14.9	28.2	33.1	3.2	73.7	1.9	15.1
			90	29.6	34.5	3.4	76.8	1.9	15.9												
	6.8	0.9	50	17.3	21.6	2.2	42.3	1.7	10.2	18.1	22.4	2.3	44.7	1.7	10.6	18.5	22.9	2.3	45.9	1.7	10.7
			60	20.3	24.7	2.4	51.0	1.7	11.8	21.3	25.7	2.6	53.7	1.7	12.3	21.8	26.3	2.6	55.2	1.7	12.5
			70	23.5	27.9	2.7	59.6	1.7	13.5	24.6	29.1	2.8	62.7	1.8	14.0	25.2	29.8	2.9	64.4	1.8	14.3
			80	26.8	31.3	3.0	68.1	1.8	15.2	28.1	32.7	3.1	71.7	1.8	15.8	28.8	33.5	3.2	73.6	1.8	16.1
			90	30.2	34.9	3.3	76.5	1.8	17.0							32.6	37.4	3.4	82.7	1.8	18.0
	9.0	1.5	50	17.4	21.7	2.2	42.3	1.7	10.3	18.2	22.5	2.2	44.6	1.7	10.7	18.7	23.0	2.3	45.9	1.7	10.9
			60	20.4	24.8	2.4	50.9	1.7	12.0	21.4	25.8	2.5	53.7	1.7	12.5	22.0	26.4	2.6	55.1	1.7	12.7
			70	23.6	28.1	2.7	59.5	1.7	13.8	24.8	29.3	2.8	62.6	1.7	14.4	25.5	30.0	2.9	64.3	1.7	14.6
			80	27.0	31.5	3.0	68.0	1.7	15.6	28.4	33.0	3.1	71.6	1.7	16.2	29.1	33.8	3.1	73.5	1.8	16.5
			90	30.5	35.1	3.3	76.4	1.8	17.4												

* Extended Range - Anti-freeze required
■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 035 - Full Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4.5 GPM						6.75 GPM						9 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	4.5	0.6	60	27.1	22.6	0.8	72.1	1.6	4.9	27.2	22.9	0.8	68.1	1.6	5.1	27.4	23.0	0.8	66.1	1.5	5.2
			80	26.2	20.8	0.6	91.7	2.0	3.9	26.4	21.2	0.6	87.9	1.9	4.0	26.3	21.1	0.6	85.9	1.9	4.0
			100	22.9	16.7	0.5	110.3	2.4	2.8	25.1	18.7	0.5	107.5	2.4	3.1	24.3	18.1	0.5	105.4	2.4	3.0
			120	25.3	17.2	0.5	131.4	3.1	2.4	25.1	17.2	0.7	127.5	3.0	2.4	24.2	16.2	0.8	125.5	3.1	2.3
	6.8	1.2	60	29.1	24.5	0.9	72.9	1.6	5.2	28.7	24.2	0.8	68.5	1.6	5.4	29.0	24.6	0.9	66.4	1.5	5.5
			80	25.9	20.6	0.6	91.6	2.0	3.8	27.7	22.3	0.7	88.2	1.9	4.2	28.0	22.7	0.7	86.2	1.9	4.3
			100	26.9	20.2	0.6	112.1	2.5	3.2	24.2	17.9	0.5	107.2	2.4	3.0	26.9	20.5	0.6	106.0	2.4	3.3
			120	26.2	17.8	0.8	131.8	3.2	2.4	25.1	17.0	0.8	127.5	3.1	2.4	26.4	18.3	0.7	125.9	3.1	2.5
	9.0	2.0	60	29.9	25.2	0.9	73.3	1.7	5.3	29.9	25.3	0.9	68.8	1.6	5.5	30.2	25.3	0.8	66.7	1.6	5.4
			80	28.6	23.0	0.8	92.8	2.0	4.1	29.1	23.5	0.7	88.6	2.0	4.3	27.5	22.2	0.7	86.1	1.9	4.2
			100	27.4	20.6	0.6	112.3	2.5	3.2	27.8	21.2	0.7	108.3	2.5	3.3	27.5	21.0	0.6	106.2	2.4	3.3
			120	26.4	18.1	0.6	131.9	3.2	2.5	26.2	18.0	0.7	127.9	3.1	2.5	27.2	19.0	0.8	126.1	3.1	2.6
50	4.5	0.5	60	28.4	21.5	0.7	110.4	2.6	3.3	32.9	23.9	1.2	134.8	3.3	2.9	33.1	24.4	1.1	129.9	3.2	3.1
			80	35.5	30.7	1.3	75.8	1.7	6.2	35.8	31.1	1.3	70.6	1.6	6.5	36.0	31.4	1.3	68.0	1.6	6.7
			100	34.6	28.7	1.1	95.5	2.1	4.8	34.7	29.0	1.1	90.3	2.0	5.1	34.8	29.2	1.1	87.8	2.0	5.2
			120	33.6	26.4	1.0	115.1	2.6	3.8	33.8	26.9	1.0	110.1	2.5	4.0	34.0	27.1	0.9	107.6	2.5	4.0
	6.8	1.1	60	32.7	24.2	1.0	127.4	3.1	3.1	34.1	25.0	1.3	135.4	3.3	3.0	34.5	25.7	1.2	130.4	3.2	3.2
			80	37.7	32.8	1.4	76.8	1.7	6.4	38.6	33.8	1.5	71.4	1.6	6.9	39.0	34.3	1.5	68.7	1.6	7.1
			100	36.0	30.0	1.2	96.1	2.1	5.0	37.5	31.8	1.3	91.2	2.0	5.4	36.8	31.1	1.2	88.2	2.0	5.4
			120	35.6	28.2	1.1	116.0	2.7	3.9	35.8	28.7	1.1	110.7	2.5	4.1	35.9	29.0	1.1	108.1	2.5	4.2
	9.0	1.8	60	34.8	26.1	1.1	127.8	3.1	3.2	35.1	25.8	1.3	135.8	3.4	3.1	32.2	23.5	1.1	129.7	3.2	3.0
			80	40.2	35.0	1.6	77.9	1.8	6.7	40.6	35.7	1.6	72.0	1.7	7.1	40.5	35.7	1.6	69.0	1.6	7.3
			100	36.0	30.0	1.2	96.1	2.1	4.9	38.3	32.5	1.3	91.4	2.1	5.5	38.5	32.8	1.3	88.6	2.0	5.6
			120	36.3	28.8	1.2	116.3	2.7	4.0	36.7	29.5	1.2	111.0	2.6	4.2	37.0	29.9	1.2	108.3	2.5	4.3
70	4.5	0.5	60	35.6	26.8	1.2	128.0	3.2	3.3	41.2	31.6	1.8	138.6	3.4	3.5	41.9	32.7	1.7	132.6	3.3	3.8
			80	44.3	39.1	1.9	79.7	1.8	7.2	46.8	41.8	2.1	73.9	1.7	8.1	45.1	40.3	2.0	70.0	1.6	8.1
			100	42.3	36.0	1.6	98.9	2.2	5.6	43.1	37.2	1.7	92.8	2.1	6.1	44.2	38.4	1.7	89.9	2.0	6.4
			120	42.4	34.6	1.6	119.0	2.8	4.5	42.8	35.4	1.6	112.8	2.6	4.8	43.6	36.3	1.6	109.8	2.6	5.0
	6.8	1.0	60	39.8	30.9	1.5	129.0	3.2	3.7	43.6	33.8	2.0	139.6	3.4	3.7	44.4	35.2	1.9	133.3	3.3	4.0
			80	49.2	43.7	2.3	81.9	1.9	7.8	48.4	43.3	2.3	74.3	1.7	8.3	50.6	45.6	2.5	71.2	1.7	8.9
			100	47.2	40.7	2.0	101.1	2.3	6.1	48.3	42.1	2.1	94.4	2.1	6.6	47.4	41.5	2.0	90.6	2.1	6.8
			120	45.3	37.4	1.9	120.3	2.8	4.8	46.2	38.7	1.9	113.8	2.6	5.1	46.1	38.8	1.8	110.3	2.6	5.3
	9.0	1.7	60	45.1	36.1	1.9	130.1	3.2	4.1	45.7	35.7	2.1	140.6	3.5	3.9	45.6	36.3	2.0	133.7	3.3	4.1
			80	51.6	46.1	2.5	83.0	1.9	8.0	50.2	45.1	2.4	74.9	1.7	8.5	53.2	48.2	2.8	71.8	1.7	9.2
			100	49.7	43.0	2.2	102.2	2.3	6.3	50.2	44.1	2.3	94.9	2.1	6.9	50.4	44.3	2.3	91.2	2.1	7.1
			120	46.3	38.3	2.0	120.8	2.8	4.8	48.2	40.6	2.0	114.4	2.7	5.3	47.9	40.5	2.0	110.7	2.6	5.4
90	4.5	0.5	60	45.7	36.6	1.9	130.3	3.2	4.2	51.8	41.6	2.8	143.3	3.5	4.3	51.8	42.3	2.6	135.5	3.3	4.6
			80	56.8	51.2	3.1	85.3	1.9	8.7	58.0	52.7	3.2	77.2	1.8	9.7	58.4	53.3	3.3	73.0	1.7	10.1
			100	54.9	48.2	2.7	104.5	2.3	6.9	50.1	44.0	2.3	94.9	2.1	6.9	56.0	50.0	2.8	92.5	2.1	7.9
			120							49.6	42.1	2.2	114.8	2.6	5.5	48.9	41.7	2.1	111.0	2.6	5.6
	6.8	1.0	60	51.5	42.3	2.5	131.6	3.2	4.7	54.8	44.5	3.2	144.7	3.6	4.5	54.8	45.3	3.2	136.5	3.3	4.8
			80	61.8	56.1	3.6	87.5	2.0	9.2	63.1	57.9	3.8	78.7	1.8	10.3	64.3	59.1	4.0	74.3	1.7	10.8
			100	59.1	52.2	3.2	106.4	2.4	7.3	60.2	53.9	3.3	97.9	2.2	8.1	61.0	54.9	3.3	93.6	2.1	8.5
			120							58.1	50.3	3.1	117.4	2.7	6.3	58.0	50.5	3.0	113.0	2.6	6.6
	9.0	1.6	60	55.2	46.0	2.9	132.4	3.2	5.0	55.9	45.5	3.5	145.2	3.6	4.5	57.2	47.5	3.2	137.2	3.4	5.0
			80	64.0	58.2	3.8	88.5	2.0	9.4	65.5	60.1	4.1	79.4	1.8	10.5	65.5	60.3	4.2	74.6	1.8	11.0
			100	59.2	52.4	3.2	106.5	2.4	7.3	63.0	56.6	3.6	98.8	2.2	8.3	64.7	58.4	3.8	94.4	2.1	8.9
			120							60.6	52.7	3.3	118.1	2.7	6.5	60.7	53.2	3.3	113.6	2.6	6.8

* Extended Range - Anti-freeze required

■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 035 - Part Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	4.5 GPM						6.75 GPM						9 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	4.5	0.6	60	19.1	16.1	0.4	68.5	1.1	5.0	19.2	16.3	0.4	65.7	1.1	5.1	19.3	16.4	0.4	64.3	1.1	5.2
			80	18.2	14.7	0.3	88.1	1.4	3.8	18.3	14.8	0.3	85.4	1.4	3.9	18.4	14.9	0.3	84.1	1.4	3.9
			100	17.8	13.6	0.3	108.0	1.8	3.0	17.5	13.4	0.3	105.2	1.7	3.0	17.9	13.7	0.3	104.0	1.7	3.1
			120	17.2	12.0	0.3	127.8	2.2	2.3	17.4	12.2	0.3	125.2	2.2	2.3	17.5	12.3	0.3	123.9	2.2	2.4
	6.8	1.2	60	19.9	16.9	0.5	68.8	1.1	5.1	20.1	17.1	0.5	65.9	1.1	5.3	20.2	17.2	0.5	64.5	1.1	5.4
			80	18.9	15.4	0.4	88.4	1.4	3.9	19.0	15.5	0.4	85.7	1.4	4.0	19.1	15.6	0.4	84.3	1.4	4.1
			100	17.9	13.6	0.3	108.0	1.8	3.0	18.0	13.8	0.3	105.4	1.7	3.1	18.3	14.1	0.3	104.1	1.7	3.1
			120	17.5	12.2	0.3	127.9	2.2	2.3	17.1	11.9	0.3	125.1	2.2	2.3	17.8	12.6	0.3	124.0	2.2	2.4
	9.0	1.9	60	20.4	17.3	0.5	69.1	1.2	5.2	20.6	17.5	0.5	66.1	1.1	5.4	20.7	17.6	0.5	64.6	1.1	5.4
			80	19.3	15.7	0.4	88.6	1.4	4.0	19.5	15.9	0.4	85.8	1.4	4.1	19.6	16.0	0.4	84.4	1.4	4.1
			100	18.5	14.1	0.3	108.3	1.8	3.1	18.8	14.5	0.3	105.6	1.7	3.2	18.5	14.2	0.3	104.1	1.7	3.1
			120	18.2	12.8	0.3	128.2	2.2	2.4	17.7	12.5	0.4	125.3	2.2	2.4	18.3	13.0	0.3	124.1	2.2	2.4
50	4.5	0.5	60	25.6	22.4	0.7	71.4	1.2	6.5	25.8	22.7	0.7	67.7	1.1	6.7	26.0	22.9	0.8	65.8	1.1	6.8
			80	24.4	20.6	0.6	90.9	1.4	5.0	24.6	20.9	0.6	87.3	1.4	5.1	24.8	21.1	0.6	85.5	1.4	5.2
			100	23.5	18.9	0.5	110.6	1.8	3.8	23.5	19.0	0.5	107.0	1.8	3.9	23.7	19.2	0.5	105.3	1.7	4.0
			120	22.9	17.2	0.5	130.3	2.3	2.9	23.1	17.4	0.5	126.9	2.2	3.0	22.8	17.2	0.5	125.1	2.2	3.0
	6.8	1.1	60	27.0	23.7	0.8	72.0	1.2	6.7	27.3	24.1	0.8	68.1	1.1	7.0	27.4	24.3	0.8	66.1	1.1	7.1
			80	25.6	21.7	0.7	91.4	1.5	5.1	25.9	22.1	0.7	87.7	1.4	5.3	26.0	22.3	0.7	85.8	1.4	5.4
			100	24.4	19.7	0.6	110.9	1.8	3.9	24.6	20.0	0.6	107.3	1.8	4.1	24.7	20.1	0.6	105.5	1.8	4.1
			120	23.5	17.6	0.6	130.6	2.3	3.0	23.6	17.9	0.5	127.1	2.2	3.1	24.0	18.3	0.5	125.4	2.2	3.2
	9.0	1.8	60	27.7	24.4	0.8	72.3	1.2	6.8	28.1	24.8	0.9	68.3	1.2	7.1	28.3	25.0	0.9	66.3	1.1	7.2
			80	26.3	22.3	0.7	91.7	1.5	5.2	26.5	22.7	0.7	87.9	1.4	5.4	26.7	22.9	0.7	86.0	1.4	5.5
			100	25.0	20.2	0.6	111.2	1.8	4.0	25.2	20.5	0.6	107.5	1.8	4.1	25.3	20.7	0.6	105.7	1.8	4.2
			120	24.3	18.4	0.6	130.9	2.3	3.1	24.5	18.7	0.6	127.4	2.3	3.2	24.1	18.4	0.6	125.4	2.2	3.2
70	4.5	0.5	60	33.3	29.8	1.2	74.8	1.2	7.9	33.7	30.3	1.2	70.0	1.2	8.4	33.9	30.6	1.2	67.5	1.2	8.6
			80	31.6	27.6	1.0	94.1	1.5	6.1	32.0	28.1	1.0	89.5	1.5	6.5	32.2	28.3	1.0	87.2	1.4	6.6
			100	30.6	25.6	0.9	113.7	1.9	4.8	30.2	25.4	0.9	109.0	1.8	4.9	30.3	25.6	0.9	106.8	1.8	5.0
			120	28.5	22.3	0.8	132.8	2.4	3.5	27.6	21.7	0.8	128.3	2.3	3.6	29.5	23.6	0.8	126.6	2.3	3.8
	6.8	1.0	60	35.2	31.7	1.3	75.6	1.3	8.2	35.7	32.3	1.4	70.6	1.2	8.8	36.0	32.6	1.4	68.0	1.2	9.0
			80	33.3	29.2	1.1	94.9	1.5	6.4	33.8	29.8	1.1	90.0	1.5	6.7	34.0	30.1	1.1	87.6	1.4	6.9
			100	31.4	26.3	1.0	114.1	1.9	4.8	32.0	27.1	1.0	109.6	1.8	5.1	32.2	27.4	1.0	107.2	1.8	5.2
			120	30.0	23.8	0.9	133.5	2.4	3.7	30.8	24.7	1.0	129.2	2.3	3.9	30.7	24.8	0.9	126.9	2.3	4.0
	9.0	1.7	60	36.3	32.7	1.4	76.1	1.3	8.3	36.9	33.4	1.4	70.9	1.2	8.9	37.2	33.8	1.5	68.3	1.2	9.1
			80	34.3	30.0	1.1	95.3	1.6	6.5	34.8	30.7	1.2	90.4	1.5	6.8	35.1	31.0	1.2	87.8	1.5	7.0
			100	32.4	27.3	1.0	114.5	1.9	4.9	32.8	27.9	1.0	109.8	1.8	5.2	33.0	28.2	1.0	107.4	1.8	5.3
			120	30.4	24.0	1.0	133.7	2.4	3.7	28.6	22.6	0.8	128.6	2.3	3.6	31.7	25.7	1.0	127.1	2.3	4.1
90	4.5	0.5	60	41.7	38.0	1.8	78.5	1.3	9.3	42.4	38.8	1.9	72.6	1.2	10.0	42.6	39.0	1.9	69.5	1.2	10.3
			80	39.6	35.2	1.5	97.7	1.6	7.3	40.0	35.8	1.5	91.9	1.5	7.8	40.5	36.4	1.6	89.0	1.5	8.0
			100	38.5	33.2	1.4	117.3	2.0	5.7	38.1	33.0	1.4	111.4	1.9	6.0	38.1	33.1	1.4	108.5	1.8	6.1
			120	36.5	30.0	1.4	136.4	2.4	4.4	36.9	30.7	1.4	131.1	2.3	4.7	36.4	30.4	1.3	128.2	2.3	4.7
	6.8	1.0	60	44.2	40.4	2.0	79.7	1.3	9.6	45.1	41.4	2.1	73.4	1.3	10.4	45.6	42.0	2.1	70.1	1.3	10.7
			80	41.8	37.3	1.7	98.7	1.6	7.5	42.5	38.2	1.7	92.7	1.5	8.1	42.9	38.7	1.8	89.6	1.5	8.4
			100	39.2	33.9	1.5	117.6	2.0	5.8	40.1	35.0	1.5	112.0	1.9	6.2	40.4	35.4	1.5	109.1	1.9	6.4
			120							36.5	30.3	1.4	130.9	2.3	4.6	35.5	29.4	1.3	128.0	2.3	4.6
	9.0	1.6	60							46.6	42.9	2.2	73.8	1.3	10.5	47.2	43.5	2.3	70.5	1.3	10.8
			80																		
			100																		
			120																		

* Extended Range - Anti-freeze required
■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 049 - Full Load (Cooling)																		
Source			Entering Fluid Temp (°F)	Load														
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)		6 GPM					9 GPM					12 GPM				
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)
50	6.0	0.8	50	38.8	44.1	6.1	37.2	1.8	22.1	40.8	46.2	6.0	41.0	1.8	22.8	43.1	48.7	7.4
			60	45.0	50.6	7.6	45.0	1.8	24.8	48.4	54.1	8.6	49.3	1.9	25.9	49.9	55.7	8.1
			70	51.5	57.2	8.7	52.9	1.9	27.3	55.9	61.9	10.3	57.6	1.9	28.8	58.0	64.1	10.3
			80	59.5	65.6	14.7	60.2	2.0	30.3	61.7	67.8	8.6	66.3	2.0	30.9	66.4	72.8	11.4
			90	66.3	72.5	9.3	67.8	2.0	32.6	71.6	78.1	10.1	74.0	2.1	33.8	74.7	81.4	12.1
			50							42.4	47.8	7.0	40.6	1.7	24.4	44.1	49.6	7.4
	9.0	1.7	60	46.1	51.5	7.7	44.7	1.8	26.3	48.8	54.3	7.5	49.2	1.8	27.2	51.4	57.1	8.5
			70	49.9	55.4	6.2	53.4	1.8	27.9	56.1	61.9	8.3	57.5	1.9	30.3	59.1	65.1	9.1
			80	59.8	65.6	8.2	60.1	1.9	31.9	65.6	71.7	11.8	65.4	1.9	33.8	68.0	74.3	10.8
			90	67.4	73.5	9.1	67.5	1.9	34.6	74.2	80.6	12.9	73.5	2.0	36.3	77.3	83.9	12.2
			50															
			60							50.2	55.8	8.3	48.9	1.8	28.0	52.4	58.1	8.7
	12.0	2.8	70	51.3	56.9	6.8	52.9	1.8	28.7	57.6	63.4	8.8	57.2	1.9	31.1	60.0	66.0	9.1
			80	60.4	66.3	8.1	59.8	1.9	32.5	65.5	71.5	9.6	65.4	1.9	34.0	68.6	74.8	9.9
			90	68.8	74.9	9.0	67.0	1.9	35.4	71.8	78.1	8.4	74.0	2.0	36.0	78.7	85.3	12.2
70	6.0	0.7	50	35.9	42.3	6.4	38.1	2.2	16.5	36.6	43.0	5.7	41.9	2.2	16.7	38.6	45.2	6.1
			60	40.9	47.5	6.9	46.4	2.2	18.4	44.5	51.2	8.4	50.2	2.3	19.5	47.0	53.9	7.9
			70	48.4	55.2	8.1	53.9	2.3	21.0	51.0	58.0	9.3	58.7	2.3	21.9	53.6	60.8	9.9
			80	55.3	62.3	11.5	61.5	2.3	23.6	58.9	66.1	11.0	66.9	2.4	24.6	62.1	69.5	14.0
			90	62.0	69.3	12.9	69.2	2.4	25.7	66.6	74.1	13.0	75.1	2.5	26.9	68.6	76.2	11.6
			50	36.3	42.5	6.5	38.0	2.1	17.5	39.5	45.8	7.4	41.3	2.1	18.6	40.8	47.2	7.7
	9.0	1.6	60	42.3	48.6	7.8	46.0	2.1	19.9	45.8	52.3	9.5	49.8	2.2	21.2	48.0	54.7	11.2
			70	49.1	55.7	8.3	53.6	2.2	22.6	51.2	57.8	7.8	58.6	2.2	23.3	54.4	61.1	9.3
			80	56.4	63.1	11.8	61.2	2.2	25.5	60.6	67.4	10.0	66.5	2.3	26.9	62.3	69.2	10.8
			90	63.9	70.8	13.5	68.6	2.3	28.2	69.1	76.2	11.8	74.6	2.3	29.7	73.0	80.4	18.1
			50	37.1	43.3	7.6	37.7	2.1	18.0	39.5	45.8	7.4	41.3	2.1	18.9	41.0	47.3	7.1
			60	41.8	48.0	6.4	46.1	2.1	20.0	46.3	52.8	8.6	49.7	2.1	21.8	47.5	54.0	8.2
	12.0	2.6	70	48.4	54.8	7.9	53.9	2.1	22.7	51.5	58.0	7.5	58.6	2.2	23.9	55.6	62.3	9.7
			80	56.7	63.2	9.9	61.1	2.2	26.2	62.2	68.9	13.9	66.2	2.2	28.1	64.0	70.9	9.6
			90	64.6	71.3	9.7	68.4	2.2	29.2	69.8	76.8	11.8	74.4	2.3	30.7	73.2	80.4	10.6
90	6.0	0.7	50	33.1	41.1	7.8	39.0	2.8	11.9	34.9	43.1	6.7	42.3	2.8	12.4	36.0	44.4	7.3
			60	38.3	46.6	8.9	47.3	2.8	13.5	41.2	49.7	7.9	50.9	2.9	14.2	37.3	45.6	4.0
			70	41.8	50.2	7.0	56.1	2.9	14.5	47.3	55.9	9.9	59.5	2.9	16.1	48.7	57.4	10.5
			80	50.4	59.0	10.8	63.2	2.9	17.2	54.2	63.0	11.8	67.9	3.0	18.2	56.3	65.3	10.7
			90	57.0	65.8	11.8	70.9	3.0	19.1	61.6	70.7	11.4	76.2	3.0	20.3	64.7	74.0	16.5
			50	33.9	41.7	8.8	38.8	2.7	12.7	35.9	43.8	8.1	42.1	2.7	13.3	36.0	44.0	6.4
	9.0	1.5	60	39.3	47.2	7.5	47.0	2.7	14.5	41.9	50.0	9.8	50.7	2.7	15.3	43.3	51.5	9.3
			70	45.0	53.2	9.9	55.0	2.8	16.4	48.4	56.6	9.3	59.3	2.8	17.5	50.5	58.8	11.6
			80	52.3	60.5	12.6	62.5	2.8	18.9	54.3	62.6	9.8	67.9	2.8	19.5	58.3	66.7	12.4
			90	58.7	67.0	13.4	70.4	2.8	21.0	60.8	69.2	10.3	76.4	2.8	21.6	66.3	74.9	12.3
			50	32.9	40.5	5.6	39.1	2.6	12.5	36.2	43.9	7.4	42.0	2.7	13.6	34.8	42.6	5.0
			60	39.3	47.1	7.7	47.0	2.7	14.8	42.6	50.6	10.4	50.6	2.7	15.8	43.8	51.9	10.0
	12.0	2.5	70	45.3	53.3	9.9	54.9	2.7	16.8	49.0	57.1	8.7	59.1	2.7	18.1	51.2	59.4	11.6
			80	52.1	60.2	10.2	62.6	2.7	19.4	53.9	61.9	8.3	68.0	2.7	19.9	58.9	67.1	11.7
			90	60.0	68.1	14.4	69.9	2.7	22.1	65.1	73.4	16.5	75.5	2.8	23.6	66.9	75.4	13.6
110	6.0	0.7	50	29.7	39.9	7.3	40.1	3.6	8.3	31.9	42.2	8.9	43.0	3.6	8.8	32.8	43.3	11.5
			60	35.0	45.4	8.3	48.4	3.6	9.6	37.0	47.6	8.9	51.8	3.7	10.1	38.2	48.9	11.0
			70	40.2	50.9	10.3	56.6	3.7	11.0	42.9	53.7	11.0	60.5	3.7	11.6	41.3	52.2	7.0
			80	46.4	57.3	13.7	64.5	3.7	12.5	50.0	61.0	14.5	68.9	3.7	13.4	51.5	62.7	15.5
			90	52.7	63.8	15.9	72.4	3.7	14.1	56.4	67.6	15.0	77.4	3.8	14.9	58.1	69.4	15.5
			50	30.5	40.4	8.0	39.9	3.5	8.8	32.0	42.0	7.1	42.9	3.5	9.2	31.4	41.4	6.2
	9.0	1.4	60	35.9	46.0	9.8	48.1	3.5	10.3	38.2	48.3	10.5	51.6	3.5	10.9	39.2	49.6	11.9
			70	41.3	51.5	9.8	56.2	3.5	11.8	43.8	54.1	11.2	60.3	3.5	12.4	44.6	55.0	9.7
			80	47.2	57.5	11.8	64.3	3.5	13.4	51.3	61.7	13.8	68.6	3.5	14.5	52.4	62.9	12.7
			90	54.1	64.5	12.5	71.9	3.5	15.4	56.0	66.5	11.2	77.5	3.5	15.8	60.8	71.5	18.6
			50	30.5	40.3	7.4	39.9	3.4	8.9	32.0	41.9	7.0	42.9	3.4	9.3	33.7	43.8	9.3
			60	35.7	45.6	8.4	48.1	3.4	10.4	38.1	48.2	9.3	51.6	3.5	11.0	39.3	49.5	9.5
	12.0	2.3	70	40.6	50.6	8.7	56.5	3.4	11.8	44.3	54.4	10.0	60.2	3.4	12.9	42.7	52.9	6.7
			80	45.2	55.3	8.5	64.9	3.4	13.2	51.3	61.4	10.6	68.6	3.4	14.9	48.9	59.0	6.9
			90	54.8	65.0	14.7	71.7	3.4	16.0	59.1	69.4	12.1	76.8	3.4	17.2	61.1	71.4	14.1

* Extended Range - Anti-freeze required
 ■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 049 - Part Load (Cooling)

Source			Load																			
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	6 GPM						9 GPM						12 GPM						
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	
50	6.0	0.8	50																			
			60	34.6	38.3	3.5	48.5	1.2	28.5	36.6	40.4	3.6	51.9	1.3	29.3	37.7	41.6	3.7	53.7	1.3	29.3	
			70	39.8	43.6	3.9	56.7	1.3	31.4	42.3	46.2	4.2	60.6	1.3	32.2	43.5	47.6	4.2	62.7	1.4	32.2	
			80	45.2	49.2	4.3	64.9	1.3	33.9	48.1	52.3	4.6	69.3	1.4	34.6	49.6	53.9	4.7	71.7	1.4	34.5	
			90	50.8	55.1	4.7	73.0	1.4	35.9	54.4	58.9	5.0	77.9	1.5	36.8							
			50																			
	9.0	1.7	60																			
			70																			
			80	46.1	50.1	4.2	64.6	1.3	34.8	49.3	53.5	4.5	69.0	1.4	35.7	50.9	55.2	4.6	71.5	1.4	35.6	
			90	52.2	56.5	4.7	72.6	1.4	37.0	55.7	60.2	4.9	77.6	1.5	37.7							
			50																			
			60																			
12.0	2.8	70																				
		80																				
		90																				
		50																				
		60																				
		80																				
70	6.0	0.8	90	52.7	57.1	4.7	72.4	1.4	36.9	56.4	61.0	4.9	77.4	1.5	37.6							
			50	26.6	30.6	2.8	41.2	1.4	19.0	28.3	32.4	3.0	43.7	1.4	19.9	29.3	33.5	3.4	45.1	1.5	20.1	
			60	31.9	36.0	3.5	49.4	1.4	22.2	33.7	37.8	3.7	52.5	1.5	23.0	34.5	38.9	3.8	54.3	1.5	23.0	
			70	36.8	41.0	4.0	57.8	1.5	24.9	38.9	43.3	4.3	61.4	1.5	25.7	40.0	44.5	4.4	63.3	1.6	25.8	
			80	41.9	46.3	4.5	66.0	1.5	27.4	44.4	49.0	4.7	70.1	1.6	28.2	45.7	50.4	4.9	72.4	1.6	28.2	
			90	47.2	51.9	5.0	74.2	1.6	29.5													
	9.0	1.6	50	27.3	31.2	2.7	41.0	1.4	19.9	29.1	33.1	3.2	43.6	1.4	20.9	29.8	33.9	3.3	45.1	1.4	20.9	
			60	32.4	36.4	3.5	49.2	1.4	23.2	34.2	38.3	3.7	52.4	1.4	24.0	35.2	39.4	3.8	54.2	1.5	24.1	
			70	37.4	41.6	4.0	57.5	1.4	26.1	39.7	43.9	4.3	61.2	1.5	27.0	40.8	45.2	4.4	63.2	1.5	27.1	
			80	42.8	47.1	4.5	65.7	1.5	28.8	45.4	49.8	4.7	69.9	1.5	29.7	46.8	51.4	4.9	72.2	1.6	29.8	
			90	48.3	52.8	4.9	73.9	1.5	31.2	51.4	56.1	5.1	78.5	1.6	32.2							
			50	28.2	32.2	2.9	40.7	1.4	20.5	29.3	33.3	3.3	43.5	1.4	21.0	30.1	34.2	3.3	45.0	1.4	21.1	
12.0	2.6	60	32.7	36.7	3.5	49.2	1.4	23.3	34.5	38.7	3.7	52.4	1.4	24.2	35.5	39.8	3.8	54.1	1.5	24.3		
		70	37.7	41.9	3.9	57.4	1.4	26.3	40.1	44.3	4.3	61.1	1.5	27.3	41.2	45.7	4.3	63.1	1.5	27.4		
		80	43.2	47.5	4.5	65.6	1.5	29.2	45.8	50.3	4.7	69.8	1.5	30.1	47.3	51.9	4.8	72.1	1.6	30.2		
		90	48.8	53.4	4.9	73.7	1.5	31.6	52.0	56.7	5.1	78.4	1.6	32.6								
		50	24.6	29.5	2.8	41.8	1.8	13.7	26.2	31.2	3.1	44.2	1.8	14.4	26.7	31.7	3.9	45.6	1.8	14.4		
		60	29.9	35.0	4.2	50.1	1.8	16.4	30.9	36.0	3.7	53.2	1.8	16.8	31.5	36.8	4.9	54.8	1.9	16.8		
90	6.0	0.7	70	34.1	39.3	4.2	58.6	1.9	18.4	36.3	41.6	4.0	61.9	1.9	19.3	36.2	41.5	4.6	64.0	1.9	18.9	
			80	39.3	44.6	5.3	66.9	1.9	20.7	41.0	46.4	4.8	70.9	1.9	21.2	42.4	47.9	5.4	72.9	2.0	21.5	
			90	44.6	50.1	5.4	75.1	2.0	22.8													
			50	24.2	28.9	2.4	42.0	1.7	13.9	26.5	31.4	3.1	44.1	1.8	15.0	26.9	31.8	3.4	45.5	1.8	15.0	
			60	29.0	33.9	3.6	50.4	1.8	16.5	31.4	36.4	4.9	53.0	1.8	17.6	31.8	36.9	4.0	54.7	1.8	17.5	
			70	35.4	40.5	4.1	58.2	1.8	19.8	36.4	41.5	5.5	61.9	1.8	20.1	37.0	42.2	5.0	63.8	1.8	20.1	
	9.0	1.5	80	38.6	43.7	4.7	67.1	1.8	21.3	41.8	47.0	4.7	70.7	1.9	22.6	41.8	47.1	4.4	73.0	1.9	22.3	
			90	45.1	50.4	6.4	74.9	1.9	24.1													
			50	24.2	28.9	2.4	42.0	1.7	13.9	26.0	30.8	2.7	44.3	1.8	14.8	27.4	32.4	4.3	45.5	1.8	15.4	
			60	29.1	34.0	3.0	50.3	1.7	16.7	30.6	35.5	3.1	53.2	1.8	17.3	32.2	37.2	4.3	54.7	1.8	17.9	
			70	34.3	39.3	3.8	58.6	1.8	19.4	34.5	39.5	2.9	62.3	1.8	19.4	37.6	42.8	5.1	63.7	1.8	20.6	
			80	39.3	44.4	4.8	66.9	1.8	21.9	41.8	47.0	5.0	70.7	1.8	22.9	42.9	48.2	5.2	72.8	1.9	23.0	
110	6.0	0.7	90	45.0	50.3	5.6	74.9	1.8	24.4													
			50	22.9	29.1	3.3	42.4	2.3	9.9	23.9	30.2	3.5	44.7	2.3	10.2	24.2	30.6	3.5	46.0	2.4	10.2	
			60	27.0	33.3	3.9	51.0	2.3	11.5	28.3	34.7	3.9	53.7	2.4	12.0	28.5	35.0	4.2	55.3	2.4	11.9	
			70	31.1	37.6	4.6	59.6	2.4	13.2	32.8	39.4	4.8	62.7	2.4	13.7	33.0	39.7	5.0	64.5	2.4	13.7	
			80	36.1	42.7	5.3	68.0	2.4	15.1	37.4	44.1	5.4	71.7	2.4	15.5	36.9	43.6	4.7	73.8	2.4	15.1	
			90																			
	9.0	1.4	50	23.2	29.2	3.3	42.3	2.3	10.2	23.7	29.8	3.3	44.8	2.3	10.4	23.8	30.1	3.5	46.1	2.3	10.3	
			60	27.2	33.4	3.9	51.0	2.3	12.0	28.4	34.7	4.0	53.7	2.3	12.4	28.9	35.2	4.3	55.2	2.3	12.5	
			70	32.0	38.3	4.4	59.3	2.3	14.0	33.2	39.6	4.7	62.6	2.3	14.4	33.1	39.6	4.5	64.5	2.3	14.2	
			80	36.8	43.2	5.1	67.7	2.3	15.9	38.0	44.5	5.7	71.5	2.3	16.4	39.1	45.7	5.8	73.5	2.4	16.6	
			90																			
			50	23.3	29.4	3.3	42.3	2.3	10.4	24.3	30.5	3.4	44.6	2.3	10.7	23.8	30.0	3.1	46.1	2.3	10.4	
12.0	2.3	60	27.3	33.5	3.9	50.9	2.3	12.1	28.6	34.8	4.0	53.7	2.3	12.6	29.2	35.6	4.4	55.1	2.3	12.7		
		70	32.4	38.6	4.5	59.2	2.3	14.3	33.4	39.7	4.5	62.6	2.3	14.6	33.6	40.0	4.5	64.4	2.3	14.5		
		80	36.7	43.1	5.2	67.7	2.3	16.1	38.7	45.1	5.8	71.4	2.3	16.8	38.7	45.2	5.5	73.5	2.3	16.7		
		90																				

* Extended Range - Anti-freeze required
■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 049 - Full Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	6 GPM						9 GPM						12 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	6.0	0.9	60	35.4	29.8	1.2	71.8	1.9	5.5	35.8	30.4	1.2	68.0	1.8	5.7	34.3	29.0	1.1	65.7	1.8	5.6
			80	34.4	27.5	1.0	91.5	2.4	4.2	34.2	27.5	1.0	87.6	2.3	4.3	35.1	28.4	1.0	85.9	2.3	4.4
			100	34.9	26.1	1.0	111.7	3.1	3.3	35.0	26.4	1.0	107.8	3.0	3.4	35.1	26.5	0.9	105.9	3.0	3.4
			120	34.9	23.6	1.4	131.8	4.0	2.5	34.7	23.7	1.3	127.8	3.9	2.6	34.8	23.9	1.2	125.9	3.9	2.6
	9.0	1.9	60	37.5	31.8	1.3	72.5	1.9	5.7	36.8	31.3	1.3	68.2	1.8	5.8	37.8	32.3	1.4	66.3	1.8	6.0
			80	34.9	27.9	1.0	91.7	2.4	4.2	36.1	29.2	1.1	88.0	2.4	4.5	34.6	27.9	1.0	85.8	2.3	4.3
			100	36.5	27.5	1.1	112.3	3.2	3.4	36.4	27.7	1.0	108.2	3.1	3.5	36.5	27.9	1.0	106.1	3.0	3.5
			120	35.8	24.2	2.4	132.1	4.1	2.6	36.1	25.0	1.4	128.1	3.9	2.7	36.4	25.3	1.3	126.1	3.9	2.7
	12.0	3.1	60	38.9	33.1	1.4	73.0	2.0	5.8	39.2	33.5	1.5	68.7	1.9	6.1	39.3	33.6	1.5	66.5	1.9	6.1
			80	38.5	31.2	1.2	92.9	2.5	4.5	37.8	30.8	1.2	88.4	2.4	4.6	38.2	31.2	1.2	86.4	2.4	4.7
			100	37.6	28.4	1.1	112.6	3.2	3.4	38.0	29.1	1.1	108.5	3.1	3.6	38.1	29.3	1.1	106.4	3.1	3.6
			120	36.3	24.7	1.6	132.3	4.1	2.6	36.8	25.6	1.4	128.3	4.0	2.7	37.2	26.0	1.1	126.3	3.9	2.8
50	6.0	0.8	60	47.7	41.7	2.0	75.9	2.0	7.0	48.1	42.4	2.2	70.7	1.9	7.4	48.0	42.3	2.1	68.0	1.9	7.5
			80	45.6	38.2	1.7	95.3	2.5	5.2	46.7	39.5	1.8	90.4	2.4	5.6	46.4	39.3	1.8	87.8	2.4	5.7
			100	45.1	35.6	1.7	115.2	3.3	4.0	44.3	35.2	1.6	109.9	3.1	4.1	44.6	35.7	1.6	107.5	3.1	4.3
			120	44.1	32.2	1.9	134.9	4.1	3.1	44.1	32.6	1.7	129.9	4.0	3.2	43.3	31.9	1.6	127.3	3.9	3.2
	9.0	1.7	60	50.5	44.3	2.3	76.8	2.0	7.2	49.7	43.8	2.2	71.0	1.9	7.5	52.5	46.6	2.5	68.7	1.9	8.0
			80	49.1	41.5	2.0	96.4	2.6	5.5	49.2	41.9	2.0	91.0	2.5	5.8	49.6	42.4	2.0	88.3	2.4	6.0
			100	46.6	37.0	1.8	115.7	3.3	4.1	47.3	38.0	1.8	110.6	3.2	4.4	47.3	38.2	1.8	107.9	3.1	4.5
			120	46.6	34.5	2.2	135.7	4.2	3.3	46.9	35.2	2.0	130.5	4.0	3.4	46.4	34.9	1.8	127.8	3.9	3.4
	12.0	2.9	60	53.3	46.9	2.5	77.8	2.1	7.4	53.4	47.4	2.6	71.9	2.0	7.9	53.9	47.9	2.6	69.0	2.0	8.1
			80	50.9	43.1	2.1	97.1	2.6	5.6	51.5	44.0	2.2	91.5	2.5	6.0	51.3	44.0	2.2	88.6	2.5	6.1
			100	48.7	38.8	1.9	116.4	3.4	4.2	48.9	39.5	1.9	111.0	3.2	4.5	48.5	39.3	1.9	108.1	3.1	4.5
			120	47.7	35.5	2.2	136.1	4.2	3.3	47.6	35.8	2.0	130.7	4.0	3.5	47.4	35.8	1.9	128.0	4.0	3.5
70	6.0	0.8	60	61.6	55.2	3.3	80.6	2.1	8.5	61.1	55.0	3.3	73.6	2.0	9.0	60.7	54.7	3.3	70.1	1.9	9.2
			80	56.9	49.1	2.7	99.1	2.6	6.3	59.7	52.3	3.0	93.3	2.5	7.0	61.3	54.1	3.1	90.3	2.4	7.4
			100	57.4	47.5	2.7	119.3	3.4	5.0	58.3	48.9	2.8	113.1	3.2	5.4	57.7	48.6	2.7	109.7	3.1	5.5
			120	56.2	43.9	3.1	139.0	4.2	3.9	54.4	42.7	2.6	132.3	4.0	4.0	56.5	44.9	2.8	129.5	3.9	4.2
	9.0	1.6	60	61.7	55.4	3.3	80.6	2.1	8.5	67.2	61.0	4.0	74.9	2.0	9.7	67.9	61.8	4.1	71.3	2.0	10.0
			80	63.4	55.4	3.4	101.3	2.7	6.9	65.2	57.7	3.5	94.6	2.5	7.6	66.1	58.7	3.6	91.1	2.5	7.9
			100	60.5	50.4	3.1	120.3	3.4	5.2	62.9	53.4	3.3	114.1	3.2	5.8	63.3	54.1	3.3	110.6	3.1	6.0
			120	59.3	46.8	3.3	140.0	4.3	4.1	60.3	48.3	3.2	133.6	4.1	4.4	59.1	47.4	3.0	130.0	4.0	4.4
	12.0	2.7	60	69.6	62.8	4.2	83.2	2.2	9.2	70.6	64.2	4.4	75.7	2.1	10.0	71.4	65.2	4.5	71.9	2.0	10.4
			80	66.7	58.4	3.8	102.3	2.7	7.1	67.7	60.0	3.8	95.1	2.6	7.8	68.9	61.4	3.9	91.5	2.5	8.1
			100	63.4	53.2	3.4	121.3	3.4	5.4	64.1	54.5	3.4	114.4	3.2	5.8	59.9	50.7	2.9	110.1	3.1	5.6
			120	60.2	47.6	3.5	140.4	4.3	4.1	61.2	49.2	3.3	133.8	4.1	4.4	61.6	49.8	3.3	130.4	4.0	4.5
90	6.0	0.7	60	77.3	70.5	5.1	85.8	2.2	10.1	72.8	66.6	4.6	76.2	2.0	10.5	82.9	76.6	5.9	73.8	2.0	11.9
			80	73.6	65.4	4.6	104.7	2.8	7.8	75.8	68.1	4.7	96.9	2.6	8.7	69.8	62.4	4.0	91.7	2.4	8.4
			100	71.1	60.8	4.4	123.9	3.5	6.0	73.5	63.9	4.5	116.5	3.2	6.7	75.2	65.8	4.6	112.6	3.1	7.1
			120	69.9	57.1	4.8	143.6	4.3	4.7	70.4	58.4	4.5	135.9	4.1	5.1	70.0	58.3	4.3	131.8	3.9	5.2
	9.0	1.5	60	82.0	75.0	5.7	87.4	2.3	10.5	89.3	82.6	6.8	79.9	2.2	12.1	88.1	81.6	6.7	74.7	2.1	12.3
			80	80.7	72.2	5.5	107.1	2.8	8.3	78.2	70.4	5.0	97.5	2.6	8.9	79.2	71.7	5.1	93.3	2.5	9.3
			100	78.6	68.0	5.4	126.4	3.5	6.5	78.0	68.3	5.2	117.5	3.3	7.0	79.3	69.9	5.2	113.3	3.1	7.4
			120							75.5	63.3	5.2	137.0	4.1	5.4	74.7	62.9	4.9	132.6	4.0	5.5
	12.0	2.5	60	88.6	81.3	6.6	89.6	2.4	10.9	92.0	85.2	7.2	80.5	2.2	12.1	93.8	87.1	7.5	75.6	2.2	12.7
			80	85.1	76.4	6.1	108.6	2.9	8.6	86.0	78.0	6.1	99.2	2.7	9.5	86.1	78.3	6.1	94.4	2.6	9.9
			100	80.9	70.2	5.7	127.2	3.6	6.6	81.4	71.6	5.6	118.3	3.3	7.2	82.8	73.3	5.7	113.9	3.2	7.6
			120							75.4	63.2	5.2	137.0	4.1	5.4	78.4	66.5	5.4	133.2	4.0	5.8

* Extended Range - Anti-freeze required
■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 049 - Part Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	6 GPM						9 GPM						12 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	6.0	0.9	60	25.0	21.2	0.6	68.3	1.4	5.3	25.2	21.4	0.6	65.6	1.4	5.5						
			80	24.7	20.0	0.5	88.3	1.8	4.1	24.9	20.3	0.5	85.5	1.7	4.2	25.0	20.4	0.5	84.2	1.7	4.3
			100	24.0	18.1	0.5	108.1	2.3	3.1	24.1	18.3	0.5	105.4	2.2	3.2	24.2	18.3	0.5	104.1	2.2	3.2
			120	23.5	15.9	0.7	127.9	3.0	2.3	23.5	16.1	0.6	125.3	2.9	2.4	23.6	16.2	0.5	124.0	2.9	2.4
	9.0	1.9	60	26.2	22.2	0.7	68.7	1.4	5.5	26.4	22.5	0.7	65.9	1.4	5.6	26.5	22.6	0.7	64.4	1.4	5.6
			80	25.7	20.9	0.6	88.6	1.8	4.2	25.9	21.1	0.6	85.8	1.7	4.4	26.0	21.3	0.6	84.3	1.7	4.4
			100	24.8	18.7	0.5	108.3	2.3	3.2	24.9	19.0	0.5	105.6	2.3	3.2	25.0	19.1	0.5	104.2	2.2	3.3
			120	24.1	16.4	0.7	128.1	3.0	2.4	24.2	16.6	0.6	125.4	2.9	2.4	24.3	16.7	0.5	124.1	2.9	2.5
	12.0	3.1	60	26.8	22.7	0.7	68.9	1.4	5.5	27.0	23.0	0.7	66.0	1.4	5.6	27.2	23.1	0.7	64.5	1.4	5.6
			80	26.2	21.3	0.6	88.8	1.8	4.3	26.4	21.6	0.6	85.9	1.8	4.4	26.6	21.7	0.6	84.4	1.8	4.4
			100	25.2	19.0	0.5	108.5	2.3	3.2	25.3	19.3	0.5	105.7	2.3	3.3	25.5	19.4	0.5	104.3	2.3	3.3
			120	24.4	16.6	0.7	128.2	3.0	2.4	24.5	16.8	0.6	125.5	2.9	2.4	24.6	17.0	0.6	124.2	2.9	2.5
50	6.0	0.8	60	34.3	30.1	1.1	71.4	1.4	7.0	34.3	30.3	1.1	67.6	1.4	7.2	35.2	31.0	1.2	65.9	1.4	7.3
			80	33.7	28.7	1.0	91.3	1.8	5.5	34.0	29.1	1.0	87.6	1.7	5.7	34.2	29.3	1.0	85.7	1.7	5.8
			100	32.3	26.0	0.9	110.9	2.3	4.1	32.5	26.4	0.9	107.3	2.3	4.2	32.7	26.6	0.9	105.5	2.2	4.3
			120	31.0	23.0	0.9	130.5	3.0	3.1	31.2	23.4	0.9	127.0	2.9	3.2	31.3	23.5	0.9	125.3	2.9	3.2
	9.0	1.7	60	36.3	32.0	1.2	72.1	1.5	7.2	36.7	32.5	1.3	68.1	1.4	7.5	32.4	28.3	1.0	65.4	1.4	6.7
			80	35.1	30.0	1.1	91.8	1.8	5.6	35.5	30.5	1.1	87.9	1.8	5.9	35.7	30.7	1.1	86.0	1.8	5.9
			100	33.5	27.1	0.9	111.3	2.3	4.2	33.8	27.5	0.9	107.6	2.3	4.4	34.0	27.8	0.9	105.7	2.3	4.4
			120	32.0	23.9	1.0	130.8	3.0	3.1	32.2	24.3	0.9	127.3	2.9	3.2	32.4	24.5	0.9	125.5	2.9	3.3
	12.0	2.9	60	38.1	33.7	1.4	72.7	1.5	7.4	37.4	33.1	1.3	68.3	1.5	7.5	37.2	32.8	1.3	66.2	1.5	7.4
			80	35.9	30.7	1.1	92.0	1.9	5.7	36.3	31.2	1.1	88.1	1.8	5.9	36.6	31.5	1.1	86.1	1.8	6.0
			100	34.2	27.7	1.0	111.5	2.4	4.2	34.5	28.1	1.0	107.7	2.3	4.4	34.7	28.4	1.0	105.8	2.3	4.5
			120	32.6	24.3	1.0	131.0	3.0	3.2	32.8	24.7	1.0	127.4	2.9	3.3	33.0	24.9	1.0	125.6	2.9	3.3
70	6.0	0.8	60	46.6	42.1	2.0	75.5	1.6	8.8	47.3	42.8	2.1	70.5	1.5	9.2	46.6	42.1	2.0	67.8	1.5	9.1
			80	44.1	38.8	1.7	94.8	1.9	6.9	44.8	39.6	1.7	90.0	1.8	7.2	45.1	40.0	1.7	87.6	1.8	7.4
			100	42.0	35.3	1.5	114.1	2.4	5.2	42.4	36.0	1.5	109.5	2.3	5.4	42.7	36.3	1.5	107.2	2.3	5.5
			120	40.0	31.6	1.5	133.5	3.0	3.9	40.3	32.2	1.5	129.1	2.9	4.0	40.5	32.4	1.5	126.8	2.9	4.1
	9.0	1.6	60	47.2	42.6	2.0	75.7	1.6	8.8	47.8	43.3	2.1	70.6	1.5	9.2	48.4	43.8	2.2	68.1	1.5	9.2
			80	46.2	40.8	1.8	95.5	1.9	7.1	46.8	41.6	1.8	90.5	1.8	7.4	47.2	42.0	1.9	87.9	1.8	7.6
			100	43.7	37.0	1.6	114.7	2.4	5.3	44.2	37.7	1.6	109.9	2.3	5.6	44.5	38.1	1.6	107.5	2.3	5.7
			120	41.4	33.0	1.6	134.0	3.0	4.0	41.8	33.6	1.6	129.4	2.9	4.2	42.1	34.0	1.6	127.1	2.9	4.3
	12.0	2.7	60	48.0	43.3	2.1	76.0	1.6	8.8	48.8	44.2	2.0	70.4	1.5	8.9	49.0	44.4	2.2	68.2	1.6	9.2
			80	47.4	41.8	1.9	95.9	2.0	7.1	48.0	42.6	1.9	90.7	1.9	7.5	48.4	43.0	2.0	88.1	1.9	7.6
			100	44.7	37.8	1.7	115.0	2.5	5.3	45.2	38.5	1.7	110.1	2.4	5.6	45.5	39.0	1.7	107.6	2.3	5.8
			120	42.2	33.7	1.7	134.3	3.1	4.0	42.7	34.4	1.7	129.6	3.0	4.2	42.9	34.7	1.7	127.2	2.9	4.3
90	6.0	0.7	60	59.3	54.2	3.1	79.8	1.7	10.1	59.1	54.1	3.2	73.1	1.7	10.5	56.8	51.9	2.9	69.5	1.6	10.3
			80	56.0	50.3	2.6	98.8	2.0	8.2	57.0	51.4	2.7	92.7	1.9	8.7	57.5	52.0	2.7	89.6	1.9	8.9
			100																		
			120																		
	9.0	1.5	60	60.7	55.5	3.2	80.2	1.7	10.2	58.7	53.8	3.0	73.0	1.7	10.4	62.2	57.0	3.4	70.4	1.7	10.7
			80																		
			100																		
			120																		
	12.0	2.5	60	58.9	53.8	3.0	79.7	1.7	9.9	62.8	57.6	3.5	74.0	1.7	10.6	63.6	58.4	3.6	70.6	1.7	10.7
			80																		
			100																		
			120																		

* Extended Range - Anti-freeze required

■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 061 - Full Load (Cooling)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	6.5 GPM						9.8 GPM						13 GPM					
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER
50	6.5	0.9	50	46.6	53.6	10.4	35.8	2.3	20.7	50.1	57.4	11.2	39.8	2.3	21.6	52.0	59.5	11.6	42.0	2.4	21.9
			60	54.0	61.2	12.1	43.5	2.3	23.1	58.5	65.9	13.1	48.1	2.4	24.5	60.9	68.6	13.6	50.7	2.4	25.0
			70	61.6	69.1	13.7	51.1	2.4	25.8	67.3	75.0	14.9	56.3	2.5	27.4	69.5	77.3	15.1	59.3	2.5	27.7
			80	69.6	77.3	15.3	58.6	2.5	28.4	76.2	84.1	16.6	64.4	2.5	30.2	80.4	88.5	17.7	67.6	2.6	31.1
			90	77.6	85.5	16.8	66.1	2.5	30.8	85.4	93.5	18.2	72.5	2.6	32.9	89.5	97.8	18.8	76.2	2.7	33.7
			50	47.5	54.2	10.3	35.5	2.1	22.3	51.2	58.0	11.0	39.6	2.2	23.4	53.2	60.3	11.5	41.9	2.2	23.9
	9.8	1.9	60	55.1	61.9	11.9	43.1	2.2	25.3	59.9	66.9	12.8	47.8	2.2	27.0	62.5	69.7	13.4	50.4	2.3	27.7
			70	63.3	70.3	13.6	50.6	2.2	28.6	69.1	76.2	14.6	55.9	2.3	30.7	71.5	78.7	14.7	59.0	2.3	31.1
			80	71.4	78.5	14.9	58.0	2.2	31.8	78.6	85.8	16.2	63.9	2.3	34.3	82.4	89.8	16.8	67.3	2.3	35.3
			90	79.8	87.0	16.3	65.4	2.3	35.0	88.1	95.5	17.6	72.0	2.3	37.8	92.6	100.1	18.2	75.7	2.4	39.0
			50							51.7	58.5	11.0	39.5	2.1	24.2	53.8	60.7	11.4	41.8	2.2	24.7
			60	55.7	62.4	11.8	42.9	2.1	26.2	60.6	67.4	12.7	47.7	2.2	28.1	63.3	70.3	13.2	50.3	2.2	28.9
	13.0	3.2	70	63.9	70.7	13.4	50.4	2.1	29.8	70.0	76.9	14.5	55.7	2.2	32.2	72.5	79.5	14.6	58.9	2.2	32.7
			80	72.2	79.1	14.8	57.8	2.2	33.4	79.7	86.7	16.0	63.7	2.2	36.3	84.1	91.3	16.7	67.0	2.2	37.6
			90	81.1	88.0	16.1	65.0	2.2	37.1	89.4	96.5	17.3	71.7	2.2	40.3	94.7	101.9	18.0	75.4	2.3	42.0
70	6.5	0.9	50	44.0	52.6	11.3	36.6	2.8	15.4	46.4	55.2	11.6	40.6	2.9	16.0	47.9	57.0	12.2	42.7	3.0	16.2
			60	50.5	59.4	12.9	44.5	2.9	17.3	54.2	63.3	13.7	49.0	3.0	18.2	56.9	66.1	14.7	51.3	3.0	18.8
			70	57.5	66.7	14.6	52.3	3.0	19.3	62.5	71.8	15.8	57.3	3.0	20.5	65.3	74.9	16.5	60.0	3.1	21.0
			80	65.0	74.3	16.2	60.0	3.1	21.3	70.8	80.5	17.5	65.5	3.1	22.7	74.3	84.1	18.4	68.6	3.2	23.3
			90	70.7	80.2	14.2	68.2	3.1	22.8	79.5	89.4	19.3	73.7	3.2	24.8	83.4	93.5	20.2	77.1	3.3	25.5
			50	44.8	53.1	11.2	36.3	2.7	16.5	47.4	55.8	11.5	40.4	2.8	17.1	49.1	57.7	12.0	42.5	2.8	17.4
	9.8	1.8	60	51.3	59.8	12.6	44.3	2.8	18.5	55.5	64.1	13.5	48.7	2.8	19.8	58.4	67.2	14.4	51.0	2.8	20.5
			70	59.0	67.7	14.4	51.9	2.8	21.1	64.2	72.9	15.4	56.9	2.8	22.6	66.8	75.7	15.9	59.7	2.9	23.1
			80	66.5	75.3	15.7	59.5	2.8	23.4	73.0	81.9	17.1	65.1	2.9	25.3	76.7	85.8	17.9	68.2	2.9	26.1
			90	75.0	83.9	16.9	66.9	2.9	26.0	82.4	91.5	18.7	73.1	2.9	28.1	86.8	96.1	19.7	76.6	3.0	29.1
			50	45.2	53.4	11.1	36.2	2.7	16.9	48.9	57.2	12.1	40.1	2.7	17.9	49.6	58.1	11.9	42.4	2.8	17.9
			60	52.2	60.6	12.7	44.0	2.7	19.2	56.2	64.6	13.4	48.6	2.7	20.5	59.2	67.8	14.3	50.9	2.8	21.3
	13.0	3.0	70	59.7	68.2	14.2	51.7	2.7	21.8	65.0	73.6	15.3	56.7	2.8	23.5	68.6	77.4	16.2	59.4	2.8	24.4
			80	67.8	76.3	15.7	59.1	2.8	24.6	74.4	83.1	17.1	64.8	2.8	26.7	77.6	86.4	17.5	68.0	2.8	27.4
			90	75.9	84.6	16.6	66.6	2.8	27.3	83.7	92.5	18.5	72.9	2.8	29.7	87.8	96.8	19.1	76.4	2.9	30.7
90	6.5	0.8	50	39.8	50.3	11.4	37.9	3.5	11.2	43.1	54.0	13.3	41.3	3.6	11.9	43.7	54.7	12.7	43.3	3.7	11.9
			60	46.2	57.1	13.5	45.8	3.6	12.7	49.7	60.8	14.5	49.9	3.7	13.5	51.2	62.6	14.7	52.1	3.7	13.7
			70	53.2	64.4	15.6	53.6	3.7	14.4	57.3	68.8	16.6	58.3	3.8	15.2	59.5	71.2	17.3	60.8	3.8	15.6
			80	59.1	70.6	14.8	61.8	3.8	15.7	65.4	77.2	18.9	66.6	3.9	17.0	67.7	79.6	19.1	69.6	3.9	17.3
			90	67.9	79.8	19.8	69.0	3.9	17.6	73.5	85.6	20.6	75.0	3.9	18.6	77.1	89.4	21.8	78.1	4.0	19.2
			50	40.5	50.7	11.3	37.6	3.4	11.9	44.1	54.5	13.1	41.1	3.5	12.7	45.7	56.3	13.7	43.0	3.5	13.0
	9.8	1.7	60	47.3	57.7	13.3	45.5	3.5	13.6	50.9	61.5	14.3	49.6	3.5	14.5	52.9	63.6	14.8	51.9	3.5	14.9
			70	54.5	65.1	15.3	53.3	3.5	15.6	58.9	69.7	16.3	58.0	3.5	16.6	61.9	72.8	17.3	60.5	3.6	17.2
			80	61.7	72.6	17.0	61.0	3.5	17.4	67.4	78.4	18.3	66.2	3.6	18.8	70.6	81.8	19.3	69.1	3.6	19.4
			90	65.3	76.1	11.9	69.9	3.6	18.4	76.5	87.7	20.4	74.3	3.6	21.0	80.0	91.4	21.3	77.6	3.7	21.7
			50	40.9	50.9	11.2	37.5	3.4	12.2	44.6	54.9	13.0	41.0	3.4	13.1	46.2	56.7	13.6	42.9	3.5	13.4
			60	47.6	57.9	13.2	45.4	3.4	14.0	51.5	61.9	14.2	49.5	3.4	15.0	53.5	64.1	14.7	51.8	3.5	15.4
	13.0	2.8	70	55.1	65.5	15.1	53.1	3.4	16.1	59.7	70.3	16.2	57.8	3.5	17.3	62.8	73.5	17.1	60.3	3.5	18.0
			80	62.5	73.1	16.8	60.8	3.4	18.1	68.7	79.4	18.4	66.0	3.5	19.7	71.7	82.6	19.0	68.9	3.5	20.3
			90	71.0	81.7	19.7	68.1	3.5	20.4	77.7	88.5	20.1	74.1	3.5	22.1	80.6	91.6	20.6	77.5	3.6	22.6
110	6.5	0.8	50	36.3	49.5	12.6	38.9	4.5	8.1	38.7	52.2	13.6	42.1	4.5	8.5	39.4	53.0	13.5	44.0	4.6	8.6
			60	42.2	55.8	14.6	47.1	4.6	9.3	44.7	58.6	15.4	50.9	4.6	9.7	46.3	60.3	15.7	52.9	4.7	9.9
			70	48.1	62.1	15.5	55.2	4.6	10.4	52.1	66.4	18.0	59.4	4.7	11.1	53.9	68.4	18.7	61.7	4.8	11.3
			80	55.4	69.7	19.0	62.9	4.7	11.7	59.4	74.0	20.5	67.9	4.8	12.4	62.2	77.0	21.8	70.4	4.9	12.8
			90	62.6	77.3	21.4	70.7	4.8	13.0	67.7	82.7	23.1	76.1	4.9	13.8	70.3	85.5	24.1	79.1	5.0	14.1
			50	37.1	49.9	12.5	38.7	4.3	8.6	39.6	52.5	13.4	42.0	4.4	9.1	40.2	53.3	13.4	43.8	4.4	9.2
	9.8	1.6	60	43.0	56.0	14.3	46.8	4.4	9.9	45.8	59.0	15.0	50.7	4.4	10.4	47.4	60.8	15.5	52.7	4.4	10.7
			70	49.6	62.9	16.8	54.8	4.4	11.3	54.0	67.4	18.1	59.0	4.4	12.1	55.9	69.5	18.5	61.4	4.5	12.5
			80	56.8	70.3	19.0	62.5	4.4	12.8	61.8	75.4	20.3	67.4	4.5	13.7	64.5	78.3	21.2	70.1	4.5	14.2
			90	64.3	78.0	20.0	70.1	4.5	14.3	70.0	83.9	22.3	75.7	4.6	15.4	72.5	86.6	22.8	78.8	4.6	15.8
			50	37.6	50.2	12.8	38.5	4.3	8.9	40.0	52.7	13.3	41.9	4.3	9.3	40.7	53.6	13.2	43.8	4.3	9.4
			60	43.4	56.2	14.2	46.7	4.3	10.1	46.6	59.6	15.2	50.5	4.3	10.8	48.0	61.2	15.3	52.6	4.4	11.0
	13.0	2.7	70	50.2	63.2	16.2	54.6	4.3	11.7	54.7	67.9	17.9	58.8	4.3	12.6	56.0	69.3	17.7	61.4	4.4	12.8
			80	58.3	71.4	18.9	62.0	4.3	13.5	62.7	76.0	19.9	67.2	4.4	14.4	64.6	78.1	19.9	70.0	4.4	14.6
			90	65.8	79.1	20.7	69.7	4.4	15.1	71.1	84.6	21.9	75.4	4.4	16.1	74.6	88.2	23.1	78.5	4.5	16.8

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 061 - Part Load (Cooling)

Source			Load																				
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	6.5 GPM						9.8 GPM						13 GPM							
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER		
50	6.5	0.9	50	35.7	40.0	4.0	39.1	1.4	25.0	36.9	41.3	4.2	42.5	1.5	25.4	38.4	43.0	4.6	44.1	1.5	25.6		
			60	41.5	46.0	5.9	47.3	1.5	28.3	44.7	49.3	7.9	50.9	1.5	29.6	44.3	49.0	5.2	53.2	1.5	28.8		
			70	45.4	50.0	12.8	56.0	1.5	31.2	50.8	55.5	7.4	59.6	1.5	32.9	51.9	56.8	6.8	62.0	1.6	32.8		
			80	53.4	58.1	6.7	63.5	1.5	34.9	57.2	61.9	7.3	68.3	1.6	36.9	59.1	64.0	7.5	70.9	1.6	37.3		
			90	59.8	64.5	7.2	71.5	1.5	39.0	64.9	69.7	9.2	76.7	1.6	41.8								
	9.8	1.9	50															46.3	50.9	6.0	52.9	1.5	31.8
			60															53.2	57.7	6.8	61.8	1.5	36.1
			70	48.7	53.1	6.9	55.0	1.4	34.5	51.4	55.9	6.6	59.5	1.4	35.8	60.6	65.1	7.4	70.7	1.5	41.6		
			80	53.6	58.0	6.3	63.5	1.4	37.7	58.5	63.0	7.2	68.0	1.4	41.0								
			90	61.1	65.5	6.9	71.1	1.4	43.4	66.2	70.6	7.8	76.4	1.4	46.8								
	13.0	3.2	50							38.0	42.3	4.3	42.3	1.4	27.6								
			60							45.4	49.7	5.9	50.8	1.4	32.4								
			70							52.0	56.4	6.5	59.4	1.4	36.8	53.8	58.3	6.7	61.7	1.4	37.3		
			80	55.1	59.5	6.7	63.0	1.4	39.8	59.2	63.6	7.1	67.9	1.4	42.6	61.6	66.1	7.4	70.5	1.4	43.5		
			90	62.5	66.7	7.5	70.7	1.4	45.8	67.0	71.3	7.8	76.3	1.4	49.1								
70	6.5	0.9	50	33.8	39.2	7.2	39.7	1.8	18.3	34.6	40.1	4.4	43.0	1.9	18.5	36.2	41.9	6.7	44.5	1.9	18.8		
			60	38.0	43.6	5.6	48.3	1.9	20.2	39.7	45.4	5.4	51.9	1.9	20.7	41.4	47.3	6.3	53.6	2.0	21.1		
			70	43.2	48.9	6.1	56.7	1.9	22.4	46.1	52.0	6.7	60.6	2.0	23.5	47.5	53.5	6.7	62.7	2.0	23.7		
			80	49.3	55.1	7.1	64.8	2.0	25.1	53.9	59.9	11.1	69.0	2.0	27.0	53.7	59.7	6.9	71.7	2.0	26.6		
			90	57.1	63.0	11.2	72.4	2.0	28.8	59.0	65.0	8.2	77.9	2.0	29.6								
			50	33.4	38.7	4.8	39.8	1.8	18.7	35.5	40.9	5.3	42.8	1.8	19.5	36.5	42.0	5.8	44.4	1.9	19.6		
	9.8	1.8	60	39.5	45.0	6.9	47.9	1.8	21.7	41.0	46.5	5.9	51.7	1.8	22.2	42.5	48.1	6.4	53.5	1.9	22.5		
			70	44.2	49.6	6.2	56.4	1.8	24.0	46.6	52.2	6.6	60.5	1.9	24.9	49.5	55.3	9.3	62.4	1.9	25.8		
			80	48.5	54.0	5.2	65.1	1.9	26.1	54.0	59.7	7.9	68.9	1.9	28.9	56.7	62.5	10.7	71.3	1.9	29.7		
			90	57.9	63.5	8.1	72.1	1.9	31.2	60.1	65.7	7.2	77.7	1.9	32.2								
			50	34.4	39.7	5.8	39.5	1.8	19.3	36.0	41.4	6.1	42.7	1.8	19.9	37.2	42.8	6.9	44.3	1.9	20.1		
			60	38.6	44.0	5.1	48.2	1.8	21.5	40.1	45.5	4.7	51.8	1.8	22.0	42.0	47.6	5.5	53.6	1.9	22.5		
	13.0	3.0	70	43.6	49.0	5.3	56.6	1.8	24.0	47.5	53.1	6.0	60.3	1.8	25.7	49.0	54.7	5.8	62.5	1.9	26.0		
			80	52.0	57.6	8.2	64.0	1.8	28.4	53.1	58.7	5.8	69.1	1.8	28.9	56.8	62.5	7.9	71.2	1.9	30.4		
		90	58.0	63.5	6.3	72.1	1.8	32.0	61.7	67.2	7.5	77.4	1.8	33.8									
90	6.5	0.8	50	30.0	36.6	5.1	40.8	2.3	12.9	32.0	38.7	6.7	43.5	2.4	13.6	32.2	39.1	5.6	45.1	2.4	13.4		
			60	34.7	41.5	6.6	49.4	2.4	14.7	36.7	43.7	5.9	52.5	2.4	15.3	37.5	44.6	6.3	54.2	2.4	15.3		
			70	39.7	46.7	6.6	57.8	2.4	16.4	42.1	49.3	7.1	61.4	2.5	17.1	43.3	50.7	7.9	63.3	2.5	17.3		
			80	45.5	52.7	8.1	66.0	2.5	18.5	45.9	53.1	5.5	70.6	2.5	18.5	50.5	58.0	12.3	72.2	2.5	20.0		
			90	51.2	58.5	7.7	74.2	2.5	20.7	52.4	59.7	6.7	79.3	2.5	21.0								
			50	31.0	37.5	5.9	40.5	2.3	13.8	32.2	38.8	5.3	43.5	2.3	14.1	32.8	39.5	5.7	45.0	2.3	14.1		
	9.8	1.7	60	35.3	42.0	5.7	49.2	2.3	15.4	37.3	44.0	6.2	52.4	2.3	16.1	38.3	45.2	6.4	54.1	2.4	16.2		
			70	41.6	48.4	8.5	57.2	2.3	17.8	42.9	49.8	6.8	61.2	2.4	18.2	44.2	51.3	6.8	63.2	2.4	18.4		
			80	42.0	48.8	3.9	67.1	2.3	18.0	49.2	56.2	7.5	69.9	2.4	20.8	50.7	57.8	7.6	72.2	2.4	21.2		
			90	53.0	59.9	6.8	73.6	2.3	22.6	52.8	59.8	5.7	79.2	2.4	22.4	55.5	62.6	7.0	81.4	2.4	23.2		
			50	30.7	37.1	4.7	40.6	2.2	13.7	31.6	38.1	4.5	43.6	2.3	13.9	33.0	39.7	5.3	45.0	2.3	14.3		
			60	33.8	40.4	3.9	49.6	2.3	15.0	37.6	44.4	6.3	52.3	2.3	16.3	41.7	48.6	6.8	58.6	2.4	17.7		
	13.0	2.8	70	41.0	47.7	6.6	57.4	2.3	17.8	43.2	50.0	6.7	61.2	2.3	18.5	45.3	52.4	8.6	63.0	2.4	19.1		
			80	46.9	53.7	7.7	65.6	2.3	20.3	49.1	55.9	7.0	70.0	2.3	21.1	51.4	58.4	8.2	72.1	2.4	21.8		
		90	53.4	60.2	8.9	73.5	2.3	23.2	56.4	63.3	8.3	78.4	2.3	24.4									
110	6.5	0.8	50	27.4	35.6	7.1	41.6	2.9	9.4	28.0	36.3	5.4	44.3	3.0	9.5	28.5	37.0	5.4	45.6	3.0	9.5		
			60	31.1	39.5	6.2	50.5	3.0	10.4	33.0	41.7	5.9	53.3	3.0	10.9	33.7	42.5	7.5	54.8	3.1	11.0		
			70	36.1	44.8	7.3	58.9	3.0	11.9	38.0	46.8	7.6	62.2	3.1	12.4	38.1	47.1	6.5	64.1	3.1	12.3		
			80	42.5	51.4	10.7	66.9	3.1	13.8	43.8	52.8	9.9	71.0	3.1	14.1	45.0	54.1	7.6	73.1	3.1	14.3		
			90	47.4	56.4	10.7	75.4	3.1	15.3														
	9.8	1.6	50	27.2	35.2	5.4	41.7	2.8	9.6	28.9	37.0	6.6	44.1	2.9	10.0	29.1	37.4	5.8	45.6	2.9	10.0		
			60	31.6	39.8	5.9	50.3	2.9	11.0	33.1	41.5	6.0	53.3	2.9	11.3	34.8	43.4	9.6	54.7	3.0	11.8		
			70	36.7	45.1	7.2	58.7	2.9	12.5	38.8	47.3	7.6	62.1	3.0	13.1	39.8	48.5	7.5	63.9	3.0	13.3		
			80	42.2	50.7	7.8	67.0	2.9	14.3	44.5	53.2	8.5	70.9	3.0	15.0	45.9	54.7	8.7	72.9	3.0	15.3		
			90	47.5	56.1	8.8	75.3	3.0	16.1	49.9	58.6	8.3	79.8	3.0	16.8								
	13.0	2.7	50	27.2	35.2	4.9	41.7	2.8	9.6	28.8	36.9	5.6	44.2	2.9	10.1	29.4	37.7	5.7	45.5	2.9	10.1		
			60	30.5	38.7	4.6	50.6	2.9	10.7	33.8	42.1	6.3	53.1	2.9	11.7	34.7	43.1	7.3	54.7	2.9	11.8		
			70	37.0	45.4	7.1	58.6	2.9	12.8	39.2	47.7	8.1	62.0	2.9	13.4	40.3	48.9	8.2	63.8	3.0	13.6		
			80	42.6	51.1	8.2	66.9	2.9	14.7	45.1	53.6	8.5	70.8	2.9	15.4	44.1	52.7	6.0	73.2	3.0	14.9		
		90	49.0	57.5	10.2	74.9	2.9	16.9	51.5	60.1	9.1	79.4	2.9	17.7									

* Extended Range - Anti-freeze required

■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 061 - Full Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	6.5 GPM						9.8 GPM						13 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	6.5	1.0	60	44.1	36.4	1.7	73.6	2.5	5.1	45.2	37.7	1.8	69.2	2.5	5.4	44.6	37.2	1.8	66.9	2.4	5.4
			80	43.0	33.5	1.5	93.3	3.2	3.9	42.4	33.3	1.4	88.7	3.1	4.0	43.3	34.2	1.5	86.7	3.1	4.2
			100	41.9	30.1	1.4	113.0	4.0	3.0	42.1	30.6	1.3	108.7	3.9	3.2	43.5	32.1	1.4	106.7	3.9	3.3
			120	41.7	26.8	0.9	133.0	5.1	2.4	41.8	27.4	1.0	128.6	5.0	2.5	42.0	27.6	0.9	126.5	4.9	2.5
	9.8	2.1	60	46.7	38.7	2.0	74.4	2.6	5.3	48.8	41.1	2.1	70.0	2.5	5.7	45.0	37.5	1.9	66.9	2.4	5.4
			80	45.0	35.3	1.6	93.9	3.3	4.1	45.3	36.0	1.7	89.3	3.1	4.2	45.9	36.6	1.7	87.1	3.1	4.3
			100	44.1	32.0	1.5	113.7	4.1	3.2	43.3	31.7	1.4	108.9	3.9	3.2	44.6	33.1	1.5	106.9	3.9	3.3
			120	43.4	28.2	1.0	133.5	5.2	2.5	42.2	27.5	1.1	128.7	5.0	2.5	41.4	27.0	0.9	126.4	5.0	2.4
	13.0	3.5	60	49.8	41.6	2.1	75.3	2.7	5.4	50.4	42.5	2.2	70.3	2.6	5.7	50.7	42.9	2.3	67.8	2.5	5.9
			80	46.6	36.6	1.8	94.4	3.3	4.1	44.0	34.6	1.6	89.0	3.2	4.1	47.4	37.9	1.8	87.3	3.2	4.4
			100	44.8	32.6	1.6	113.9	4.1	3.2	46.0	34.1	1.6	109.5	4.0	3.4	43.5	31.9	1.4	106.8	3.9	3.2
			120	44.4	29.0	1.1	133.8	5.2	2.5	44.1	29.2	1.1	129.1	5.1	2.5	44.0	29.0	2.2	126.9	5.1	2.5
50	6.5	1.0	60	57.3	48.8	2.9	77.6	2.7	6.1	57.7	49.7	2.9	71.8	2.6	6.5	58.1	50.1	3.0	68.9	2.5	6.7
			80	55.7	45.4	2.5	97.2	3.4	4.8	55.9	46.1	2.5	91.5	3.2	5.1	56.8	47.0	2.5	88.8	3.2	5.2
			100	53.1	40.3	2.3	116.5	4.2	3.7	54.4	42.1	2.3	111.2	4.1	3.9	55.1	43.1	2.3	108.6	4.0	4.0
			120	53.9	37.7	3.1	136.8	5.4	2.9	54.7	39.3	2.7	131.3	5.2	3.1	53.9	38.7	2.5	128.4	5.1	3.1
	9.8	2.0	60	61.3	52.7	3.2	78.9	2.8	6.4	62.1	53.9	3.4	72.7	2.6	6.9	62.6	54.5	3.5	69.6	2.6	7.1
			80	56.8	46.4	2.6	97.6	3.4	4.8	60.2	50.2	2.9	92.3	3.3	5.4	59.4	49.6	2.9	89.2	3.2	5.4
			100	57.5	44.5	2.6	117.9	4.3	3.9	57.5	45.1	2.6	111.8	4.1	4.1	58.9	46.7	2.7	109.1	4.0	4.3
			120	56.2	39.7	3.9	137.5	5.5	3.0	56.5	40.9	3.1	131.7	5.2	3.2	56.7	41.3	2.8	128.8	5.1	3.3
	13.0	3.3	60	63.8	55.0	3.5	79.7	2.9	6.6	64.7	56.3	3.7	73.2	2.7	7.1	65.2	57.0	3.8	70.0	2.6	7.3
			80	60.9	50.2	3.0	98.8	3.5	5.1	60.0	49.9	2.9	92.3	3.3	5.3	62.6	52.6	3.2	89.7	3.3	5.6
			100	58.9	45.7	2.8	118.3	4.4	4.0	59.4	46.9	2.8	112.2	4.2	4.2	59.8	47.5	2.8	109.3	4.1	4.3
			120	58.3	41.6	3.6	138.2	5.5	3.1	57.1	41.3	2.9	131.8	5.2	3.2	58.9	43.3	3.2	129.2	5.2	3.3
70	6.5	0.9	60	73.1	64.1	4.6	82.5	2.9	7.4	74.1	65.7	4.8	75.1	2.7	8.1	74.9	66.7	4.9	71.5	2.6	8.4
			80	69.1	58.3	3.9	101.4	3.5	5.7	71.5	61.2	4.2	94.7	3.3	6.3	68.8	58.9	3.9	90.6	3.2	6.2
			100	69.4	55.9	3.9	121.5	4.4	4.6	69.7	57.1	3.9	114.4	4.2	4.9	69.9	57.5	3.9	110.8	4.1	5.0
			120	67.1	50.1	4.5	140.9	5.6	3.5	67.5	51.5	4.1	134.0	5.3	3.8	68.3	52.7	3.9	130.6	5.1	3.9
	9.8	1.9	60	79.2	70.0	5.3	84.4	3.0	7.8	80.9	72.3	5.6	76.5	2.7	8.6	81.7	73.3	5.8	72.6	2.7	9.0
			80	76.2	65.0	4.8	103.6	3.6	6.1	78.7	68.2	5.0	96.1	3.4	6.8	77.9	67.7	4.9	92.0	3.3	6.9
			100	73.6	59.8	4.5	122.9	4.5	4.8	74.6	61.7	4.5	115.4	4.2	5.2	75.2	62.6	4.5	111.7	4.1	5.4
			120	71.2	53.9	5.1	142.2	5.7	3.7	71.8	55.6	4.6	134.9	5.3	4.0	72.2	56.4	4.4	131.3	5.2	4.1
	13.0	3.1	60	82.7	73.3	5.8	85.5	3.0	8.0	84.6	75.8	6.1	77.3	2.8	8.9	85.5	76.9	6.3	73.1	2.7	9.3
			80	81.3	69.8	5.3	105.1	3.7	6.4	80.6	69.9	5.3	96.5	3.5	6.8	81.4	71.0	5.3	92.6	3.4	7.1
			100	75.9	61.9	4.8	123.6	4.6	4.9	77.0	63.9	4.8	115.9	4.3	5.3	77.6	64.9	4.8	112.0	4.2	5.5
			120	72.9	55.4	5.3	142.8	5.7	3.7	73.9	57.5	4.8	135.3	5.4	4.0	74.7	58.7	4.7	131.6	5.2	4.2
90	6.5	0.9	60	91.3	81.8	6.9	88.1	3.1	8.7	93.4	84.6	7.3	79.1	2.8	9.8	94.4	85.9	7.5	74.5	2.7	10.3
			80	87.2	75.6	6.2	107.0	3.8	6.8	89.0	78.2	6.4	98.2	3.5	7.5	89.7	79.4	6.5	93.9	3.3	7.9
			100	86.1	71.7	6.3	126.7	4.7	5.4	86.2	73.0	6.1	117.8	4.3	5.9	87.2	74.4	6.1	113.5	4.2	6.1
			120							84.2	67.5	6.3	137.4	5.4	4.6	84.1	68.0	6.2	133.1	5.2	4.7
	9.8	1.8	60	100.0	90.0	8.2	90.8	3.2	9.2	102.2	93.1	8.7	80.9	2.9	10.4	103.4	94.7	9.0	75.9	2.8	11.0
			80	95.5	83.5	7.4	109.5	3.9	7.2	97.4	86.3	7.7	100.0	3.5	8.1	99.0	88.3	7.8	95.3	3.4	8.5
			100	92.3	77.6	7.3	128.7	4.8	5.7	92.3	78.8	7.1	119.0	4.4	6.2	95.9	82.8	7.4	114.9	4.2	6.6
			120							90.2	73.2	7.4	138.6	5.5	4.8	88.4	72.1	6.9	133.8	5.3	4.9
	13.0	2.9	60	104.8	94.6	9.0	92.3	3.3	9.4	107.6	98.3	9.6	82.0	2.9	10.7	109.4	100.5	9.9	76.8	2.8	11.4
			80	99.8	87.5	8.2	110.9	4.0	7.4	102.6	91.4	8.4	101.1	3.6	8.3	103.9	93.1	8.6	96.1	3.5	8.8
			100	91.1	76.4	7.2	128.3	4.8	5.6	99.4	85.6	8.1	120.5	4.5	6.5	98.5	85.2	7.8	115.3	4.3	6.7
			120							92.8	75.7	7.9	139.2	5.5	4.9	94.5	78.0	7.8	134.7	5.4	5.2

* Extended Range - Anti-freeze required
 ■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 061 - Part Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	6.5 GPM						9.8 GPM						13 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	6.5	1.0	60	32.2	27.0	1.0	69.9	1.8	5.3	32.5	27.4	1.0	66.6	1.7	5.5	33.2	28.1	1.1	65.1	1.7	5.6
			80	30.2	23.8	0.8	89.3	2.3	3.9	30.6	24.3	0.8	86.3	2.2	4.1	31.4	25.1	0.8	84.8	2.2	4.2
			100	30.8	22.8	0.8	109.6	2.9	3.1	30.9	23.1	0.8	106.4	2.8	3.2	31.1	23.2	0.8	104.8	2.8	3.3
			120	30.3	19.8	1.6	129.4	3.8	2.3	30.4	20.4	1.1	126.3	3.6	2.5	30.5	20.6	1.0	124.8	3.6	2.5
	9.8	2.1	60	34.3	28.9	1.1	70.5	1.8	5.5	33.9	28.7	1.1	66.9	1.8	5.6	34.1	28.8	1.1	65.2	1.8	5.7
			80	33.0	26.4	0.9	90.2	2.3	4.2	33.2	26.7	0.9	86.8	2.3	4.3	33.0	26.6	0.9	85.1	2.2	4.3
			100	32.0	23.9	0.8	109.9	2.9	3.2	32.2	24.2	0.8	106.6	2.8	3.3	32.3	24.4	0.8	105.0	2.8	3.3
			120	31.2	21.0	0.9	129.7	3.7	2.5	31.4	21.2	1.1	126.5	3.7	2.5	31.4	21.1	2.4	124.9	3.7	2.5
	13.0	3.5	60	34.8	29.3	1.1	70.7	1.9	5.5	35.1	29.7	1.2	67.2	1.8	5.7	34.8	29.4	1.2	65.4	1.8	5.7
			80	33.9	27.1	1.0	90.5	2.4	4.2	34.1	27.5	1.0	87.0	2.3	4.4	34.3	27.6	1.0	85.3	2.3	4.4
			100	32.7	24.4	0.9	110.1	3.0	3.2	32.8	24.7	0.9	106.8	2.9	3.3	33.0	24.9	0.9	105.1	2.9	3.4
			120	31.7	21.1	1.4	129.9	3.8	2.5	31.9	21.6	1.2	126.6	3.7	2.5	31.8	21.5	0.9	124.9	3.7	2.5
50	6.5	1.0	60	43.5	37.8	1.8	73.4	1.9	6.7	43.3	37.8	1.7	68.8	1.8	7.0	44.0	38.5	1.8	66.8	1.8	7.2
			80	40.3	33.4	1.4	92.5	2.4	5.0	41.3	34.5	1.4	88.5	2.3	5.3	39.8	33.2	1.3	86.1	2.3	5.1
			100	40.0	31.4	1.3	112.4	3.0	3.9	38.7	30.5	1.2	108.0	2.9	3.9	34.7	26.7	1.0	105.4	2.8	3.6
			120	39.1	28.3	1.5	132.2	3.8	3.0	39.2	28.7	1.4	128.1	3.7	3.1	39.4	28.9	1.4	126.1	3.7	3.2
	9.8	2.0	60	45.7	39.9	1.9	74.1	1.9	6.9	45.7	40.1	1.9	69.3	1.8	7.2	46.0	40.4	2.0	67.1	1.8	7.4
			80	43.3	36.2	1.6	93.4	2.4	5.2	43.5	36.6	1.6	88.9	2.3	5.5	44.1	37.2	1.6	86.8	2.3	5.6
			100	41.6	32.8	1.4	112.9	3.0	4.0	41.9	33.4	1.4	108.6	2.9	4.2	40.7	32.3	1.3	106.3	2.9	4.1
			120	40.4	29.4	1.6	132.6	3.8	3.1	40.8	30.1	1.5	128.4	3.7	3.2	41.0	30.4	1.5	126.4	3.7	3.3
	13.0	3.3	60	46.2	40.3	1.9	74.2	2.0	6.9	48.0	42.3	2.1	69.8	1.9	7.4	47.5	41.7	2.1	67.3	1.9	7.4
			80	43.4	36.2	1.6	93.4	2.5	5.2	44.8	37.7	1.7	89.2	2.4	5.5	45.0	38.0	1.7	86.9	2.4	5.6
			100	42.8	33.9	1.5	113.3	3.1	4.1	42.9	34.3	1.5	108.8	3.0	4.2	42.9	34.4	1.5	106.7	3.0	4.3
			120	41.4	30.2	1.7	132.9	3.9	3.1	41.7	30.8	1.6	128.6	3.8	3.2	41.9	31.1	1.5	126.5	3.7	3.3
70	6.5	0.9	60	55.7	49.7	2.7	77.1	2.0	8.2	54.9	49.1	2.7	71.2	1.9	8.5	56.6	50.9	2.8	68.7	1.9	8.9
			80	52.2	44.8	2.3	96.1	2.5	6.1	52.9	45.8	2.3	90.8	2.4	6.5	54.3	47.3	2.4	88.4	2.4	6.7
			100	50.1	41.0	2.1	115.6	3.1	4.7	46.9	38.3	1.8	109.7	3.0	4.6	51.0	42.3	2.1	107.9	3.0	5.0
			120	49.3	38.0	2.3	135.4	3.9	3.7	49.2	38.2	2.2	130.2	3.8	3.8	49.6	38.8	2.2	127.7	3.7	3.9
	9.8	1.9	60	57.8	51.6	2.9	77.8	2.0	8.4	58.2	52.3	3.0	71.9	1.9	8.9	58.9	53.2	3.1	69.1	1.9	9.2
			80	56.6	49.1	2.7	97.5	2.5	6.5	54.9	47.7	2.5	91.2	2.4	6.7	57.5	50.4	2.7	88.9	2.4	7.1
			100	52.7	43.5	2.3	116.4	3.2	4.9	51.7	42.8	2.2	110.6	3.0	5.0	53.5	44.7	2.3	108.3	3.0	5.3
			120	51.5	39.9	2.5	136.0	3.9	3.8	51.8	40.7	2.4	130.7	3.8	4.0	52.2	41.3	2.4	128.1	3.7	4.1
	13.0	3.1	60	60.7	54.5	3.2	78.7	2.1	8.6	61.0	55.0	3.3	72.4	1.9	9.2	61.7	55.8	3.4	69.5	1.9	9.5
			80	57.3	49.7	2.7	97.7	2.6	6.5	59.1	51.7	2.9	92.1	2.5	7.1	58.9	51.7	2.9	89.1	2.4	7.2
			100	52.6	43.3	2.3	116.3	3.2	4.8	55.1	46.1	2.5	111.3	3.1	5.3	54.9	46.0	2.4	108.5	3.0	5.4
			120	52.7	41.0	2.7	136.4	4.0	3.9	53.0	41.8	2.5	130.9	3.8	4.1	53.7	42.6	2.6	128.4	3.8	4.2
90	6.5	0.9	60	67.2	61.0	3.9	80.7	2.0	9.6	70.7	64.9	4.4	74.4	1.9	10.9	70.3	64.7	4.3	70.8	1.8	11.2
			80	63.0	55.5	3.3	99.5	2.5	7.3	67.3	60.1	3.7	93.8	2.4	8.2	68.2	61.1	3.8	90.5	2.4	8.5
			100	62.5	53.0	3.3	119.4	3.2	5.7	64.2	55.3	3.4	113.2	3.0	6.2	61.4	52.6	3.1	109.5	3.0	6.1
			120							61.2	50.0	3.5	132.7	3.8	4.7	61.2	50.2	3.3	129.5	3.7	4.8
	9.8	1.8	60	74.4	68.1	4.8	82.9	2.1	10.5	76.2	70.3	5.1	75.5	1.9	11.6	77.2	71.4	5.2	71.9	1.9	12.1
			80	71.1	63.3	4.3	102.0	2.6	8.0	71.8	64.5	4.3	94.7	2.4	8.6	72.9	65.7	4.3	91.3	2.4	9.0
			100	64.9	55.3	3.6	120.1	3.2	5.9	65.1	56.0	3.5	113.4	3.0	6.3	68.4	59.5	3.8	110.6	3.0	6.7
			120							63.3	51.9	3.6	133.1	3.8	4.8	60.0	48.9	3.2	129.3	3.7	4.7
	13.0	2.9	60	75.2	68.8	4.9	83.2	2.1	10.4	76.2	70.2	5.1	75.6	2.0	11.4	81.2	75.4	5.8	72.5	1.9	12.6
			80	72.3	64.4	4.3	102.4	2.6	8.0	73.7	66.3	4.5	95.1	2.5	8.8	72.8	65.5	4.3	91.3	2.4	8.9
			100	68.6	58.9	4.0	121.3	3.3	6.1	69.8	60.7	4.0	114.4	3.1	6.6						
			120	66.2	54.0	4.3	140.6	4.1	4.7	67.3	55.8	4.2	133.9	3.9	5.1						

* Extended Range - Anti-freeze required
 ■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 122 - Full Load (Cooling)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	15 GPM						22.5 GPM						30 GPM					
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER
50	15.0	1.2	50	120.6	134.7	7.4	42.0	4.4	27.3	125.0	140.5	7.7	44.5	4.8	26.0	125.7	143.6	7.9	45.8	5.5	22.7
			60	140.4	154.6	8.4	50.7	4.4	31.7	146.1	161.6	8.8	53.5	4.8	30.3	147.6	165.5	9.0	55.1	5.5	26.8
			70	161.5	175.9	9.4	59.2	4.5	36.2	168.6	184.3	9.7	62.5	4.8	34.9	171.0	188.9	9.9	64.3	5.5	31.1
			80	183.8	198.2	10.3	67.7	4.5	41.0	192.5	208.1	10.6	71.4	4.9	39.7	195.7	213.6	10.8	73.5	5.5	35.6
			90	207.2	221.6	11.1	76.1	4.5	46.0	217.4	233.1	11.5	80.3	4.9	44.8	221.4	239.2	11.8	82.6	5.5	40.4
	22.5	2.5	50	Operation not recommended																	
			60	Operation not recommended																	
			70	163.7	178.7	9.3	59.1	4.6	35.5	171.2	187.4	9.6	62.4	5.0	34.4	173.7	192.2	9.8	64.2	5.6	30.8
			80	186.6	201.6	10.1	67.5	4.6	40.6	195.7	211.8	10.5	71.3	5.0	39.5	199.2	217.5	10.7	73.3	5.6	35.6
			90	210.5	225.4	11.0	75.9	4.6	46.0	221.0	237.1	11.5	80.1	4.9	45.0	225.3	243.5	11.8	82.5	5.5	40.7
	30.0	4.2	50	Operation not recommended																	
			60	Operation not recommended																	
80			188.0	205.0	10.1	67.4	5.2	36.4	197.3	215.4	10.4	71.2	5.5	35.9	200.9	221.1	10.6	73.3	6.1	32.7	
		90	212.1	228.9	11.0	75.8	5.1	41.4	222.8	240.8	11.5	80.1	5.4	40.9	227.3	247.3	11.8	82.4	6.1	37.5	
70	15.0	1.1	50	110.9	128.3	7.8	42.7	5.6	19.8	114.5	133.3	8.1	44.9	6.0	19.1	114.8	136.0	8.3	46.2	6.7	17.1
			60	129.6	147.2	8.9	51.4	5.6	23.1	134.4	153.4	9.3	54.0	6.0	22.4	135.4	156.7	9.5	55.5	6.7	20.2
			70	149.7	167.5	10.0	60.0	5.7	26.5	155.8	174.9	10.4	63.1	6.0	25.8	157.5	178.9	10.6	64.7	6.7	23.5
			80	171.0	188.9	11.0	68.6	5.7	30.1	178.4	197.6	11.4	72.1	6.1	29.5	181.0	202.4	11.6	74.0	6.7	27.0
			90	193.2	211.3	12.0	77.1	5.7	33.8	202.2	221.5	12.4	81.0	6.1	33.3	Operation not recommended					
	22.5	2.4	50	112.1	130.3	7.8	42.6	5.8	19.3	115.9	135.5	8.1	44.9	6.2	18.7	116.2	138.3	8.2	46.1	6.9	16.8
			60	131.2	149.5	8.9	51.3	5.8	22.6	136.2	155.9	9.2	54.0	6.2	22.0	137.4	159.3	9.4	55.4	6.9	20.0
			70	151.8	170.1	9.9	59.9	5.8	26.2	158.1	177.8	10.2	63.0	6.2	25.6	160.1	182.0	10.4	64.7	6.8	23.4
			80	173.6	192.0	10.9	68.4	5.8	29.9	181.4	201.1	11.2	71.9	6.2	29.5	184.2	206.1	11.4	73.8	6.8	27.1
			90	196.5	214.9	11.8	76.9	5.8	33.9	205.9	225.5	12.1	80.8	6.1	33.6	Operation not recommended					
	30.0	4.0	50	112.7	133.0	7.8	42.5	6.4	17.7	116.6	138.2	8.1	44.8	6.8	17.2	117.0	141.0	8.2	46.1	7.5	15.6
			60	132.0	152.3	8.8	51.2	6.4	20.7	137.1	158.7	9.1	53.9	6.7	20.3	138.3	162.3	9.3	55.4	7.4	18.6
			70	152.8	173.1	9.8	59.8	6.4	24.1	159.3	180.9	10.2	62.9	6.7	23.7	161.3	185.2	10.4	64.6	7.4	21.9
			80	174.9	195.2	10.8	68.3	6.3	27.6	182.9	204.4	11.2	71.9	6.7	27.4	185.9	209.5	11.3	73.8	7.3	25.4
			90	198.1	218.3	11.7	76.7	6.3	31.4	207.8	229.2	12.0	80.7	6.6	31.3	Operation not recommended					
90	15.0	1.1	50	100.5	121.8	8.2	43.3	7.0	14.5	103.6	126.3	8.6	45.4	7.4	14.1	103.5	128.6	8.7	46.6	8.1	12.8
			60	118.4	139.8	9.5	52.1	7.0	17.0	122.3	145.1	9.9	54.6	7.4	16.6	122.7	148.0	10.0	55.9	8.1	15.2
			70	137.3	159.0	10.7	60.9	7.0	19.5	142.3	165.4	11.1	63.7	7.4	19.2	143.5	168.8	11.3	65.2	8.1	17.8
			80	156.6	178.6	11.8	69.5	7.1	22.1	163.6	186.9	12.3	72.7	7.4	22.0	165.5	191.0	12.6	74.5	8.1	20.4
			90	178.4	200.6	13.1	78.1	7.1	25.1	186.1	209.5	13.5	81.7	7.5	24.9	Operation not recommended					
	22.5	2.2	50	101.6	123.5	8.2	43.3	7.1	14.2	104.8	128.2	8.5	45.4	7.5	13.9	104.8	130.5	8.7	46.5	8.2	12.7
			60	119.8	141.9	9.4	52.0	7.1	16.8	123.9	147.3	9.8	54.5	7.5	16.5	124.5	150.3	10.0	55.9	8.2	15.2
			70	139.1	161.4	10.6	60.7	7.1	19.5	144.4	168.0	11.0	63.6	7.5	19.2	145.8	171.6	11.2	65.1	8.2	17.8
			80	159.9	182.2	11.8	69.3	7.2	22.4	166.4	190.0	12.2	72.6	7.5	22.1	168.5	194.3	12.4	74.4	8.2	20.7
			90	181.4	203.8	12.8	77.9	7.2	25.4	189.5	213.1	13.3	81.5	7.5	25.3	Operation not recommended					
	30.0	3.7	50	102.1	126.0	8.1	43.2	7.7	13.3	105.5	130.6	8.5	45.3	8.1	13.1	105.4	133.0	8.6	46.5	8.8	12.0
			60	120.5	144.5	9.4	52.0	7.7	15.7	124.7	149.9	9.7	54.5	8.0	15.5	125.3	152.9	9.9	55.8	8.7	14.4
			70	140.1	164.1	10.6	60.7	7.7	18.3	145.5	170.8	10.9	63.5	8.0	18.1	146.9	174.5	11.1	65.1	8.7	16.9
			80	160.9	185.0	11.7	69.3	7.6	21.1	167.7	193.0	12.1	72.5	8.0	21.0	169.9	197.4	12.3	74.3	8.6	19.7
			90	182.9	207.0	12.7	77.8	7.6	24.0	191.2	216.5	13.1	81.5	8.0	24.0	Operation not recommended					
110	15.0	1.0	50	90.1	116.4	8.7	44.0	8.7	10.3	92.4	120.1	9.1	45.9	9.1	10.2	91.9	122.0	9.2	47.0	9.8	9.4
			60	106.7	133.2	10.2	52.9	8.7	12.2	109.7	137.6	10.6	55.1	9.1	12.0	109.7	140.0	10.8	56.4	9.8	11.2
			70	124.3	151.2	11.6	61.7	8.8	14.2	128.3	156.5	12.1	64.3	9.2	14.0	128.9	159.4	12.3	65.7	9.8	13.1
			80	143.1	170.2	13.1	70.4	8.8	16.2	148.2	176.7	13.5	73.4	9.2	16.1	149.5	180.1	13.8	75.0	9.9	15.2
			90	162.9	190.3	14.5	79.1	8.9	18.3	Operation not recommended						Operation not recommended					
	22.5	2.1	50	91.0	117.9	8.7	44.0	8.9	10.3	93.5	121.7	9.0	45.9	9.2	10.1	93.0	123.7	9.2	46.9	10.0	9.3
			60	107.9	135.0	10.1	52.8	8.8	12.2	111.1	139.5	10.5	55.1	9.2	12.0	111.2	141.9	10.7	56.3	9.9	11.2
			70	126.0	153.2	11.5	61.6	8.8	14.2	130.2	158.7	11.9	64.2	9.2	14.1	130.9	161.7	12.1	65.6	9.9	13.3
			80	145.4	172.8	12.9	70.3	8.9	16.4	150.6	179.3	13.3	73.3	9.2	16.3	152.0	182.9	13.6	74.9	9.9	15.4
			90	164.8	192.4	14.1	79.0	8.9	18.6	Operation not recommended						Operation not recommended					
	30.0	3.5	50	91.4	120.1	8.6	43.9	9.4	9.8	94.0	124.0	9.0	45.8	9.7	9.6	93.5	125.9	9.2	46.9	10.5	9.0
			60	108.5	137.3	10.1	52.8	9.3	11.6	111.8	141.8	10.4	55.0	9.7	11.5	111.9	144.3	10.6	56.3	10.4	10.8
			70	126.7	155.6	11.5	61.6	9.3	13.6	131.1	161.2	11.9	64.2	9.7	13.5	131.9	164.3	12.1	65.6	10.3	12.8
			80	146.4	175.4	12.8	70.2	9.3	15.7	151.8	182.0	13.2	73.2	9.7	15.7	153.3	185.7	13.5	74.9	10.3	14.9
			90	166.2	195.2	14.0	78.9	9.3	17.9	Operation not recommended						Operation not recommended					

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 122 - Part Load (Cooling)																					
Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	15 GPM						22.5 GPM						30 GPM					
				Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER	Cooling Capacity (MBH)	Loop Rej/Add (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	EER
50	15.0	1.2	50												43.9	50.2	3.7	47.1	2.0	22.4	
			60	50.5	55.0	4.0	53.3	1.4	35.8	51.7	56.8	4.1	55.4	1.6	32.5	51.5	57.8	4.2	56.6	1.9	26.7
			70	58.3	62.8	4.5	62.2	1.4	42.2	59.8	64.8	4.6	64.7	1.6	38.3	59.8	66.0	4.6	66.0	1.9	31.7
			80	66.5	70.8	4.8	71.1	1.4	49.1	68.3	73.3	5.0	73.9	1.5	44.8	68.6	74.6	5.1	75.4	1.8	37.2
	22.5	2.5	50																		
			60																		
			70																		
			80	67.3	72.1	4.9	71.0	1.5	45.5	69.2	74.6	5.0	73.8	1.6	42.1	69.4	75.9	5.1	75.4	2.0	35.5
	30.0	4.2	50																		
			60																		
			70																		
			80																		
70	15.0	1.1	50	40.4	45.9	3.7	44.6	1.8	22.5	41.0	47.2	3.8	46.4	2.0	20.5	40.5	47.9	3.9	47.3	2.4	17.2
			60	47.0	52.6	4.3	53.7	1.8	25.9	48.0	54.2	4.4	55.7	2.0	23.9	47.7	55.0	4.5	56.8	2.3	20.3
			70	53.3	58.8	4.4	62.9	1.8	29.6	54.6	60.8	4.7	65.1	2.0	27.6	54.5	61.8	4.7	66.4	2.3	23.6
			80	61.5	67.0	5.3	71.8	1.8	34.6	63.1	69.1	5.3	74.4	2.0	32.3	63.1	70.3	5.4	75.8	2.3	27.8
	22.5	2.4	50	40.8	46.8	3.7	44.6	1.9	21.0	41.4	48.1	3.8	46.3	2.1	19.3	40.9	48.8	3.9	47.3	2.5	16.3
			60	47.5	53.5	4.3	53.7	2.0	24.3	48.5	55.2	4.4	55.7	2.1	22.6	48.2	56.1	4.5	56.8	2.5	19.5
			70	53.9	59.9	4.4	62.8	1.9	27.9	55.1	61.8	4.5	65.1	2.1	26.2	55.5	63.2	5.0	66.3	2.4	22.8
			80	62.2	68.1	5.1	71.7	1.9	32.7	63.8	70.3	5.3	74.3	2.1	30.8	63.9	71.5	5.3	75.7	2.4	26.8
	30.0	4.0	50	40.9	48.0	3.7	44.6	2.3	18.1	41.6	49.3	3.8	46.3	2.5	16.9	41.1	50.0	3.9	47.3	2.8	14.6
			60	47.7	54.8	4.3	53.7	2.3	21.1	48.7	56.5	4.4	55.7	2.4	19.9	48.5	57.4	4.4	56.8	2.8	17.4
			70	54.1	61.2	4.4	62.8	2.2	24.2	55.5	63.1	4.5	65.1	2.4	23.0	55.8	64.5	5.0	66.3	2.7	20.4
			80	62.5	69.5	5.1	71.6	2.2	28.4	64.2	71.8	5.2	74.3	2.4	27.1	64.3	73.0	5.3	75.7	2.7	24.0
90	15.0	1.1	50	36.5	43.1	3.9	45.2	2.2	16.3	36.9	44.1	3.9	46.7	2.4	15.1	36.2	44.7	4.0	47.6	2.8	13.0
			60	42.7	49.4	4.5	54.3	2.3	18.8	43.3	50.7	4.6	56.2	2.5	17.7	42.9	51.4	4.7	57.1	2.8	15.4
			70	49.6	56.3	5.1	63.4	2.3	22.0	50.6	57.9	5.2	65.5	2.4	20.8	50.3	58.8	5.3	66.6	2.8	18.2
			80	56.9	63.6	5.7	72.4	2.2	25.5	58.3	65.6	5.8	74.8	2.4	24.2	58.2	66.6	5.9	76.1	2.7	21.3
	22.5	2.2	50	36.8	43.9	3.8	45.1	2.4	15.5	37.2	44.9	3.9	46.7	2.6	14.4	36.5	45.5	4.0	47.6	2.9	12.5
			60	43.0	50.2	4.5	54.3	2.4	18.0	43.8	51.6	4.6	56.1	2.6	17.0	43.3	52.3	4.7	57.1	2.9	14.9
			70	50.1	57.2	5.1	63.3	2.4	21.1	51.1	58.9	5.2	65.5	2.5	20.1	50.9	59.8	5.3	66.6	2.9	17.7
			80	57.6	64.7	5.6	72.3	2.3	24.5	59.0	66.7	5.7	74.7	2.5	23.4	59.0	67.8	5.8	76.1	2.8	20.8
	30.0	3.7	50	36.9	45.0	3.8	45.1	2.7	13.9	37.3	46.1	3.9	46.7	2.9	13.0	36.7	46.7	4.0	47.6	3.2	11.4
			60	43.2	51.4	4.5	54.3	2.7	16.1	44.0	52.8	4.6	56.1	2.9	15.3	43.6	53.5	4.7	57.1	3.2	13.6
			70	50.3	58.5	5.0	63.3	2.7	19.0	51.4	60.2	5.2	65.4	2.8	18.2	51.2	61.1	5.3	66.6	3.2	16.2
			80	57.9	66.0	5.6	72.3	2.6	22.1	59.3	68.0	5.7	74.7	2.8	21.2	59.3	69.1	5.8	76.0	3.1	19.1
110	15.0	1.0	50	32.4	40.5	4.0	45.7	2.8	11.6	32.6	41.4	4.2	47.1	3.0	10.9	31.9	41.8	4.2	47.9	3.3	9.5
			60	38.1	46.3	4.7	54.9	2.8	13.6	38.7	47.5	4.9	56.6	3.0	12.9	38.1	48.1	4.9	57.5	3.3	11.4
			70	44.6	52.8	5.5	64.1	2.8	15.9	45.3	54.2	5.7	66.0	3.0	15.2	44.9	54.9	5.7	67.0	3.3	13.5
			80	51.4	59.7	6.2	73.1	2.8	18.4	52.5	61.3	6.4	75.3	3.0	17.7	52.2	62.2	6.4	76.5	3.3	15.9
	22.5	2.1	50	32.7	41.2	4.0	45.7	2.9	11.2	32.9	42.1	4.1	47.1	3.1	10.6	32.2	42.6	4.2	47.9	3.5	9.3
			60	38.5	47.1	4.6	54.9	2.9	13.2	39.0	48.3	4.9	56.5	3.1	12.5	38.5	48.9	4.9	57.4	3.5	11.1
			70	45.0	53.6	5.4	64.0	2.9	15.5	45.8	55.1	5.6	65.9	3.1	14.8	45.5	55.8	5.7	67.0	3.4	13.3
			80	52.0	60.6	6.1	73.0	2.9	18.0	53.1	62.3	6.3	75.3	3.1	17.3	52.9	63.2	6.4	76.5	3.4	15.7
	30.0	3.5	50	32.8	42.2	4.0	45.6	3.2	10.3	33.1	43.2	4.1	47.1	3.4	9.8	32.3	43.6	4.2	47.9	3.7	8.6
			60	38.7	48.3	4.7	54.8	3.2	12.1	39.2	49.4	4.9	56.5	3.4	11.6	38.6	50.0	4.9	57.4	3.7	10.4
			70	45.3	54.8	5.4	64.0	3.2	14.2	46.1	56.2	5.6	65.9	3.4	13.7	45.7	57.0	5.6	67.0	3.7	12.4
			80	52.3	61.8	6.1	73.0	3.2	16.6	53.4	63.5	6.3	75.2	3.3	16.1	53.2	64.4	6.3	76.4	3.6	14.6

* Extended Range - Anti-freeze required
 ■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 122 - Full Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	15 GPM						22.5 GPM						30 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	15.0	1.4	60	97.4	81.8	2.0	66.5	5.0	5.7	99.0	82.4	2.0	64.4	5.3	5.5	101.5	82.7	2.0	63.4	5.9	5.0
			80	93.1	74.0	1.6	86.2	6.3	4.3	94.5	74.5	1.6	84.2	6.6	4.2	96.8	74.8	1.5	83.2	7.2	4.0
			100	90.9	67.4	1.4	106.1	7.9	3.4	92.0	67.7	1.4	104.1	8.1	3.3	93.2	67.1	1.3	103.1	8.7	3.2
			120	88.1	58.3	1.8	125.9	10.2	2.5	91.3	60.7	1.7	124.1	10.4	2.6	90.2	58.5	1.6	123.0	10.7	2.5
	22.5	2.8	60	100.5	83.3	2.2	66.7	5.5	5.4	101.2	83.1	2.1	64.5	5.8	5.2	103.7	83.4	2.1	63.5	6.4	4.8
			80	96.1	75.5	1.7	86.4	6.8	4.2	97.7	76.1	1.7	84.4	7.0	4.1	99.1	75.5	1.6	83.3	7.6	3.8
			100	91.5	66.6	1.4	106.2	8.3	3.2	93.7	67.9	1.4	104.2	8.6	3.2	95.9	68.1	1.4	103.2	9.1	3.1
			120	90.1	57.9	3.7	126.1	10.9	2.4	90.3	58.3	1.7	124.1	10.7	2.5	90.2	56.5	1.5	123.0	11.3	2.4
	30.0	4.7	60	100.9	81.1	2.2	66.7	6.3	4.7	102.6	81.8	2.2	64.6	6.5	4.6	105.1	82.1	2.2	63.5	7.2	4.3
			80	96.3	73.1	1.7	86.4	7.5	3.8	97.9	73.7	1.7	84.4	7.8	3.7	100.2	74.0	1.7	83.4	8.4	3.5
			100	92.9	65.2	1.5	106.2	9.1	3.0	94.2	65.8	1.4	104.2	9.3	3.0	95.9	65.5	1.4	103.2	9.9	2.8
			120	89.4	55.4	2.0	126.0	11.4	2.3	90.7	56.2	1.7	124.1	11.5	2.3	94.8	58.5	2.4	123.2	12.0	2.3
50	15.0	1.3	60	130.3	113.8	3.6	68.7	5.2	7.3	132.9	115.6	3.7	65.9	5.4	7.2	135.5	116.2	3.7	64.5	6.0	6.6
			80	124.3	104.3	2.9	88.3	6.5	5.6	126.2	105.4	2.9	85.6	6.7	5.5	129.2	106.5	2.9	84.3	7.2	5.2
			100	119.6	95.0	2.5	108.0	8.1	4.3	120.5	95.3	2.4	105.4	8.3	4.3	122.8	95.7	2.4	104.1	8.8	4.1
			120	115.5	84.8	2.5	127.8	10.2	3.3	116.9	85.6	2.4	125.3	10.3	3.3	118.9	86.0	2.4	124.0	10.8	3.2
	22.5	2.6	60	135.6	117.8	3.9	69.0	5.6	7.1	137.8	119.2	4.0	66.1	5.8	6.9	140.6	119.9	4.0	64.7	6.4	6.4
			80	128.2	106.7	3.1	88.6	6.9	5.4	130.1	107.9	3.1	85.8	7.1	5.4	132.7	108.5	3.1	84.4	7.6	5.1
			100	124.8	98.9	2.8	108.4	8.5	4.3	123.7	97.1	2.6	105.5	8.6	4.2	126.0	97.6	2.6	104.2	9.2	4.0
			120	117.6	85.4	2.6	127.9	10.6	3.3	119.0	86.3	2.5	125.4	10.7	3.3	121.1	86.7	2.4	124.1	11.2	3.2
	30.0	4.4	60	138.0	117.7	4.0	69.2	6.3	6.4	140.3	119.2	4.1	66.2	6.5	6.3	143.1	120.0	4.2	64.8	7.1	5.9
			80	130.1	106.2	3.2	88.7	7.6	5.0	132.1	107.5	3.2	85.9	7.8	5.0	134.7	108.2	3.2	84.5	8.4	4.7
			100	123.5	95.1	2.7	108.3	9.2	3.9	125.3	96.2	2.7	105.6	9.4	3.9	127.6	96.8	2.6	104.3	9.9	3.8
			120	118.1	83.5	2.6	128.0	11.3	3.1	120.6	85.5	2.5	125.4	11.4	3.1	122.8	86.0	2.5	124.1	11.9	3.0
70	15.0	1.2	60	171.7	154.8	6.3	71.4	5.3	9.5	174.4	156.9	6.4	67.7	5.5	9.3	177.4	157.9	6.5	65.9	6.0	8.6
			80	163.5	142.9	5.1	90.9	6.6	7.3	166.0	144.8	5.1	87.4	6.7	7.2	168.8	145.8	5.1	85.6	7.3	6.8
			100	156.1	130.8	4.4	110.5	8.2	5.6	157.7	132.1	4.4	107.1	8.3	5.6	160.3	132.9	4.3	105.4	8.8	5.4
			120	149.2	117.7	4.2	130.1	10.3	4.2	151.0	119.2	4.0	126.8	10.3	4.3	153.3	119.9	3.9	125.2	10.8	4.2
	22.5	2.5	60	179.5	161.3	6.8	72.0	5.7	9.2	182.5	163.7	7.0	68.1	5.9	9.1	185.7	164.9	7.1	66.2	6.4	8.5
			80	169.9	148.0	5.5	91.4	7.0	7.1	172.7	150.2	5.6	87.7	7.1	7.1	175.6	151.3	5.6	85.9	7.6	6.7
			100	160.1	133.5	4.7	110.8	8.6	5.5	162.5	135.5	4.6	107.3	8.7	5.5	165.1	136.4	4.6	105.5	9.2	5.3
			120	152.0	119.1	4.3	130.3	10.7	4.2	154.0	120.8	4.2	126.9	10.7	4.2	156.3	121.6	4.1	125.3	11.2	4.1
	30.0	4.1	60	182.2	161.7	7.0	72.1	6.4	8.4	185.4	164.3	7.3	68.2	6.5	8.3	190.1	167.1	7.5	66.3	7.1	7.9
			80	173.8	149.6	5.8	91.6	7.7	6.6	176.2	151.4	5.8	87.9	7.8	6.6	179.2	152.7	5.8	86.0	8.3	6.3
			100	162.6	133.7	4.8	110.9	9.3	5.2	166.0	136.8	4.9	107.4	9.3	5.2	168.8	137.8	4.8	105.7	9.8	5.0
			120	153.9	118.7	4.5	130.4	11.4	4.0	156.0	120.5	4.3	127.0	11.4	4.0	158.4	121.4	4.2	125.3	11.8	3.9
90	15.0	1.1	60	218.5	201.2	10.0	74.6	5.4	11.8	226.7	208.9	10.6	70.1	5.5	12.0	225.7	206.1	10.6	67.5	6.0	10.9
			80	208.0	186.9	8.3	93.9	6.8	9.0	211.5	190.0	8.5	89.4	6.8	9.1	214.8	191.6	8.5	87.2	7.3	8.6
			100	201.0	175.0	7.5	113.5	8.4	7.0	204.2	178.1	7.4	109.2	8.4	7.2	207.3	179.7	7.4	107.0	8.8	6.9
			120	187.9	155.5	6.8	132.7	10.5	5.3	190.4	158.1	6.6	128.6	10.4	5.4	193.1	159.4	6.5	126.5	10.8	5.2
	22.5	2.3	60	229.5	210.9	11.0	75.3	5.8	11.6	233.6	214.7	11.5	70.4	5.9	11.6	237.4	216.6	11.8	67.9	6.4	10.9
			80	217.5	195.1	9.1	94.6	7.1	8.9	221.4	198.7	9.3	89.9	7.2	9.1	224.2	199.8	9.3	87.5	7.6	8.6
			100	206.0	178.8	7.9	113.9	8.8	6.9	208.9	181.6	7.8	109.4	8.7	7.0	212.1	183.2	7.8	107.1	9.2	6.8
			120	194.5	160.9	7.4	133.1	10.8	5.3	196.1	162.5	7.0	128.8	10.8	5.3	198.9	164.0	6.8	126.7	11.2	5.2
	30.0	3.9	60	235.4	214.6	11.6	75.7	6.5	10.7	238.7	217.6	11.9	70.6	6.5	10.7	244.1	221.2	12.2	68.1	7.0	10.2
			80	221.2	196.6	9.4	94.8	7.8	8.3	225.6	200.7	9.6	90.1	7.8	8.5	229.2	202.6	9.7	87.7	8.3	8.1
			100	208.5	179.0	8.1	114.0	9.4	6.5	212.1	182.6	8.1	109.5	9.4	6.6	215.4	184.4	8.1	107.2	9.8	6.4
			120	196.2	160.3	7.5	133.2	11.5	5.0	200.4	164.7	7.4	129.0	11.4	5.2	203.3	166.2	7.2	126.9	11.8	5.1

* Extended Range - Anti-freeze required

■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.

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

TW R-454B Model Series

Residential Water to Water Heat Pumps



Capacity Data 122 - Part Load (Heating)

Source			Load																		
Entering Fluid Temp (°F)	Water Flow (GPM)	Pressure Drop (PSI)	Entering Fluid Temp (°F)	15 GPM						22.5 GPM						30 GPM					
				Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP	Heating Capacity (MBH)	Heat Absorb (MBH)	Pressure Drop (PSI)	Leaving Fluid Temp (°F)	Power Input (kW)	COP
30	15.0	1.4	60	34.7	29.2	1.1	64.6	1.8	5.6	35.3	29.3	1.1	63.1	2.0	5.2	36.6	29.4	1.1	62.4	2.3	4.6
			80	32.8	26.2	0.9	84.4	2.3	4.2	33.8	26.6	0.9	83.0	2.4	4.0	34.6	26.3	0.9	82.3	2.8	3.7
			100	31.6	23.5	0.7	104.2	2.9	3.2	32.2	23.6	0.7	102.9	3.0	3.1	33.2	23.6	0.7	102.2	3.3	3.0
			120	30.7	20.6	0.8	124.1	3.6	2.5	31.3	20.7	0.8	122.8	3.8	2.4	32.3	20.8	0.8	122.2	4.0	2.4
	22.5	2.8	60	35.5	29.3	1.2	64.7	2.0	5.1	36.1	29.3	1.2	63.2	2.2	4.8	37.7	29.8	1.2	62.5	2.5	4.4
			80	33.6	26.1	0.9	84.5	2.5	3.9	34.2	26.2	0.9	83.0	2.7	3.8	35.3	26.3	0.9	82.4	3.0	3.5
			100	32.1	23.2	0.8	104.3	3.1	3.1	32.7	23.4	0.8	102.9	3.2	3.0	33.6	23.3	0.7	102.3	3.5	2.8
			120	31.3	20.4	0.8	124.2	3.8	2.4	31.8	20.5	0.8	122.9	4.0	2.4	32.9	20.7	0.8	122.2	4.2	2.3
	30.0	4.7	60	36.0	28.5	1.2	64.8	2.4	4.4	36.6	28.4	1.2	63.2	2.6	4.2	37.8	28.5	1.2	62.5	2.9	3.8
			80	34.0	25.3	0.9	84.6	2.9	3.4	34.7	25.4	0.9	83.1	3.0	3.3	35.8	25.5	0.9	82.4	3.4	3.1
			100	32.5	22.4	0.8	104.4	3.5	2.8	32.9	22.3	0.8	103.0	3.6	2.7	34.1	22.5	0.8	102.3	3.9	2.6
			120	31.5	19.4	0.9	124.3	4.2	2.2	32.1	19.5	0.8	122.9	4.4	2.2	33.1	19.5	0.8	122.2	4.6	2.1
50	15.0	1.3	60	36.6	27.9	1.0	108.9	3.0	3.5	40.6	29.9	1.3	125.5	3.7	3.2	40.8	29.8	1.3	123.7	3.8	3.2
			80	47.0	41.2	2.0	66.3	1.9	7.4	47.9	41.6	2.0	64.3	2.0	7.0	49.0	41.7	2.0	63.3	2.3	6.2
			100	44.3	37.3	1.6	85.9	2.4	5.5	45.0	37.5	1.6	84.0	2.5	5.3	44.5	36.0	1.5	83.0	2.8	4.7
			120	39.6	31.2	1.2	105.3	2.9	4.0	41.5	32.6	1.3	103.7	3.0	4.0	44.0	34.0	1.3	103.0	3.3	3.9
	22.5	2.6	60	42.1	30.2	1.3	122.8	4.1	3.0	40.8	29.5	1.3	125.5	3.9	3.1	41.3	29.6	1.3	123.7	4.0	3.0
			80	48.5	42.0	2.1	66.5	2.1	6.9	48.4	41.5	2.1	64.3	2.2	6.4	49.4	41.4	2.1	63.3	2.5	5.8
			100	45.0	37.3	1.6	86.0	2.6	5.2	46.3	38.1	1.7	84.1	2.7	5.1	48.1	38.9	1.7	83.2	3.0	4.7
			120	42.9	33.7	1.4	105.8	3.1	4.0	43.8	34.2	1.4	103.9	3.3	4.0	44.9	34.3	1.4	103.0	3.5	3.7
	30.0	4.4	60	42.6	30.0	1.3	122.9	4.3	2.9	41.1	28.6	1.3	125.5	4.2	2.8	41.9	29.0	1.3	123.8	4.4	2.8
			80	48.9	41.3	2.2	66.5	2.4	5.9	49.6	41.5	2.2	64.4	2.6	5.7	51.0	41.7	2.2	63.4	2.9	5.2
			100	46.7	37.7	1.8	86.3	2.9	4.7	46.8	37.3	1.7	84.2	3.0	4.5	48.0	37.5	1.7	83.2	3.3	4.2
			120	43.2	32.7	1.4	105.8	3.5	3.6	44.2	33.3	1.4	104.0	3.6	3.6	45.1	33.2	1.4	103.0	3.9	3.4
70	15.0	1.2	60	43.4	29.6	1.4	122.9	4.6	2.8	52.3	41.4	2.3	127.1	3.7	4.1	52.5	41.2	2.1	124.7	3.8	4.1
			80	61.4	55.6	3.4	68.2	1.9	9.6	62.0	55.7	3.4	65.5	2.0	9.1	63.5	56.2	3.4	64.2	2.3	8.1
			100	57.7	50.5	2.7	87.7	2.4	7.1	58.2	50.6	2.7	85.2	2.5	6.8	59.0	50.4	2.7	83.9	2.8	6.2
			120	52.3	43.5	2.1	107.0	3.0	5.2	55.9	46.7	2.4	105.0	3.1	5.3	55.0	44.9	2.2	103.7	3.3	4.8
	22.5	2.5	60	53.6	41.5	2.1	123.6	4.1	3.9	52.9	41.3	2.3	127.1	3.9	4.0	54.2	42.3	2.3	124.9	4.0	4.0
			80	63.0	56.6	3.6	68.4	2.0	9.0	64.1	57.2	3.7	65.7	2.2	8.7	65.5	57.6	3.7	64.4	2.5	7.8
			100	59.4	51.6	2.8	88.0	2.6	6.8	60.4	52.1	2.9	85.4	2.7	6.6	62.0	52.8	2.9	84.1	3.0	6.1
			120	56.0	46.6	2.4	107.5	3.1	5.2	56.7	46.9	2.4	105.1	3.3	5.1	58.4	47.7	2.4	103.9	3.5	4.9
	30.0	4.1	60	55.2	42.5	2.3	123.7	4.2	3.8	54.2	41.4	2.3	127.3	4.2	3.8	54.1	41.1	2.3	124.9	4.3	3.7
			80	64.9	57.3	3.8	68.6	2.4	8.0	65.5	57.5	3.8	65.8	2.5	7.7	65.6	56.6	3.7	64.4	2.8	6.9
			100	61.0	52.0	3.0	88.2	2.9	6.2	61.1	51.8	3.0	85.5	3.0	6.0	63.0	52.7	3.0	84.2	3.3	5.6
			120	56.7	46.2	2.5	107.6	3.5	4.8	57.6	46.6	2.5	105.2	3.6	4.7	57.0	45.1	2.3	103.8	3.8	4.3
90	15.0	1.1	60	55.6	41.7	2.3	123.7	4.6	3.6	65.0	54.0	3.5	128.8	3.7	5.2	66.0	54.7	3.4	125.9	3.8	5.1
			80	77.1	71.5	5.4	70.3	1.8	12.5	78.9	72.9	5.5	67.0	1.9	12.1	80.4	73.3	5.7	65.4	2.2	10.7
			100	73.0	65.9	4.4	89.8	2.3	9.2	74.1	66.6	4.4	86.6	2.4	8.9	75.6	67.1	4.4	85.1	2.7	8.2
			120																		
	22.5	2.3	60																		
			80																		
			100																		
			120																		
	30.0	3.9	60																		
			80																		
			100																		
			120																		

* Extended Range - Anti-freeze required
■ Operation not recommended

- Interpolation is permissible. Not extrapolation
- 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.