



Delta Limited
649B (650 MBH Input - 2 Stage Fire)

Tag: **RAYWH3649BNGBRZCNP8**
Project: **P8 Delta Stock**
Quantity: **1**

Unit Information

Model Series:	Delta Limited
Size:	649B (650 MBH Input - 2 Stage Fire)
Fuel:	
Location:	Outdoor
Altitude:	0 ft

Heating Performance

Input Temp:	55	F
Output Temp:	140	F
Design Capacity:	0	MBTUH
Input Capacity:	650	MBTUH
Output Capacity:	540	MBTUH
Thermal Efficiency:	83.1	%

Water Flow

Design Flow:		gpm
Max Flow:	28	gpm
Min Flow:	90	gpm
Pressure Drop:		ft. wg

General Unit Data

Unit Weight:	590	lbs.
Unit Length:	25	in.
Unit Width:	60	in.
Unit Height:	34	in.



Delta Limited



Product Data: Type WH Water Heater

Qty	Description
1	Type WH Water Heater

Tag(s): RAYWH3649BNGBRZCNP8**Selected Options**

Application : Domestic Water Heater
Location : Outdoor
Model Size / Input : 649B (650 MBH Input - 2 Stage Fire)
Fuel Type : Natural Gas
Efficiency : 83.1 %
Water Quality / Pump Selection Criteria : Hard (16 to 25 GPG) / P8 (P11 non-ferrous)
Pump Type : Mounted Pumps
Pump Material : Bronze \ Stainless Steel
Header Material : Bronze
Heat Exchanger Material : A-3 Cupronickel Heat Exchanger
Pressure Relief Valves : A-15 125 PSIG (Standard for Water Heater)
Ignition Module : Standard 3-Try Ignition - Auto Reset
Low Water Cut Off : None
Codes : G-12 California
4 inch Supply Gas Pressure Configuration (G-20) : None
High Limit - Manual Reset : None
High Limit - Combination : I-12 Adjustable Auto Limit / Adjustable Manual Limit - 200/200 F
Low Gas Pressure Switch : None
High Gas Pressure Switch : None
Low Water Pressure Switch : None
Surerack - Unit Stacking Kit : None
Mounting Location : Rear-Mounted
Mounted Pumps : P-8 Bronze Mounted Pump (Hard 16 to 25 GPG)
Cold Water Start Systems : None
Cold Water Run Pumps : None
Injector Pump : None
Flanges : None
Control / Valve : None
Controller (Not Included, See Accessories Section) : None
Elevation : Below 2000 ft (0 – 1999 ft)

Selected Accessories

Delta Limited WH Small Standard Features

Qty: 5 Tags: RAYWH1399BNGBRZCNP8, RAYWH3499BNGBRZCNP8, RAYWH3649BNGBRZCNP8, RAYWH3749BNGBRZCNP8, RAYWH3899BNGBRZCNP8

Standard Features**Heat Exchanger**

- ASME HLW Stamp
- ASME Inspected and Stamped
- 160 PSIG Working Pressure
- National Board Approved
- ASME Steel Tube Sheet
- Silicone High Temp O-Rings
- Temperature and Pressure Gauge

Control

- 120V, 60Hz, 1Ø, Power Supply
- 120/24V 60 Hz transformer
- 100% Shut-Off/Lockout
- Hot Surface Ignition
- Remote flame sensor
- High limit control, manual reset
- On/Off Power Switch
- Manual shut-off, front-mounted switch
- Flow Switch
- Blocked Vent Pressure Switch
- Combustion Air Proving Switch
- Pump Time Delay Relay, 5 Minute, Fixed
- Status Display Lights

Burner

- Ultra-Low NOx: Less than 20 PPM

Gas Train

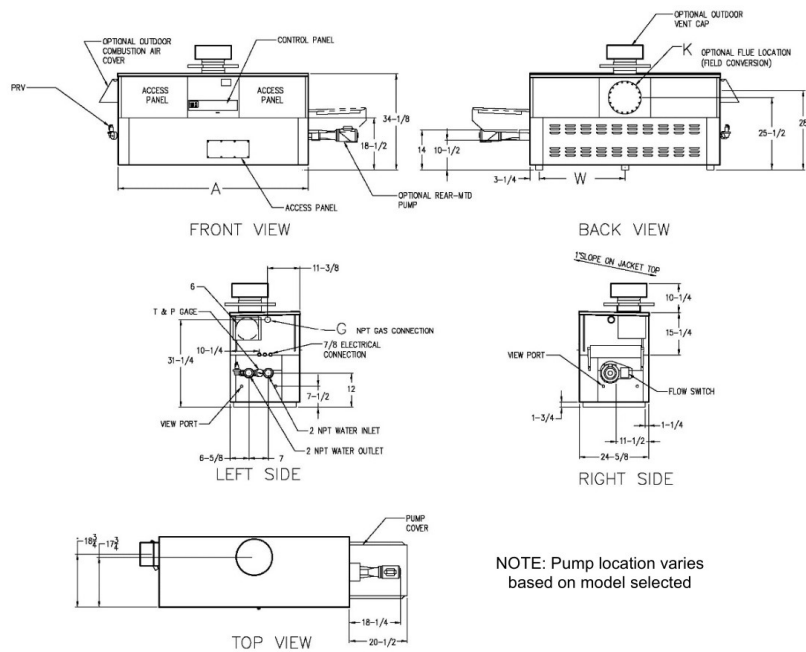
- Manual Gas Shut-off Valve(s)
- Combination Valves
- Design Certified – ANSI Z21.10.3/CSA 4.3

Construction

- Indoor/outdoor construction
- Enclosed front controls
- CSA Low Lead Certified ($\leq 25\%$ Lead)
- 100% Factory Fire Tested
- Thermal Shock Proof Heat Exchanger
- Limited Twenty-Year Thermal Shock Warranty
- Limited Ten-Year Cupro-Nickel Heat Exchanger Warranty
- Limited Five-Year Copper Heat Exchanger Warranty
- PolyTuf Powder Coated Cabinet
- Combustible Floor Shield Required
- Fan-Assisted
- Patented Burner Security Blanket
- Proudly Assembled in the USA

Delta Limited WH Dimensions 649B

Qty: 1 Tags: RAYWH3649BNGBRZCNP8



Model	SPECIFICATIONS								Approx. Shipping Wt. (lbs.)
	MBTUH			A Width	G NPT	K	W	Amp. Draw	
	Input	Output 85%	Output 83.1%						
649B	650	553	540	60-1/2	1-1/4	8	27-1/4	6	590

NOTES: 1. Rates shown are for natural or propane gas, and elevations up to 4,500 feet. For installation above 4,500 feet, please contact manufacturer.
2. Recommended natural gas supply pressure is 7 – 10.5" WC. Recommended propane gas supply pressure is 11 - 13" WC.
3. Amp draw is heater less pump

Model	83.1% System Flow and Head Loss													
	3-4 Grains Per Gallon					5-15 Grains Per Gallon					16-25** Grains Per Gallon			
	ΔT (°F)	GPM	ΔP (FT WC)	MTS (IN)	SHL (FT WC)	ΔT (°F)	GPM	ΔP (FT WC)	MTS (IN)	SHL (FT WC)	ΔT (°F)	GPM	ΔP (FT WC)	SHL (FT WC)
649B	27	40	2.2	2	5.3	21	52	3.7	2	8.7	12	90	10.8	24.7

Model	85% System Flow and Head Loss													
	3-4 Grains Per Gallon					5-15 Grains Per Gallon					16-25** Grains Per Gallon			
	ΔT (°F)	GPM	ΔP (FT WC)	MTS (IN)	SHL (FT WC)	ΔT (°F)	GPM	ΔP (FT WC)	MTS (IN)	SHL (FT WC)	ΔT (°F)	GPM	ΔP (FT WC)	SHL (FT WC)
649B	28	40	2.2	2	5.3	21	52	3.7	2	8.7	12	90	10.8	24.7

SHL includes 50 ft of tubing each way (100 total)
** Must use optional cupro-nickel tubes. For hardness exceeding 25 GPG, must use water softener
Basis for minimum flow is 40 GPM or 30°F ΔT, 90 GPM for maximum flow

Model	83.1 % Recovery Rates								
	20°	30°	40°	50°	60°	70°	80°	90°	100°
649B	3274	2182	1637	1309	1091	935	818	727	655

Model	85 % Recovery Rates								
	20°	30°	40°	50°	60°	70°	80°	90°	100°
649B	3348	2232	1674	1339	1116	957	837	744	670