

All copper & bronze construction

On/Off & modulating models

High temperature applications



RAYPAK® HOT WATER & HEATING

Raypak® is a compact, efficient heating design which is the ideal way to heat large quantities of water for both hot water and hydronic applications.

The use of direct fired pure copper finned heat exchangers has been well proven over time.

And in the past fifty years, the Raypak® range has developed the high input water heater even further.

Efficiency

- Efficient all copper heat exchanger provides an outstanding 82% thermal efficiency
- Hot Surface Ignition (HSI) or spark ignition reduces operating costs
- Economaster pump control saves energy

Robust Design

- Raypak® copper tube gas water heaters are high quality, versatile and robust
- Lightweight ceramic fibre refractory panels have an ingenious design which reduces heat loss

- All copper and bronze construction resists combined effects of corrosion and high temperature

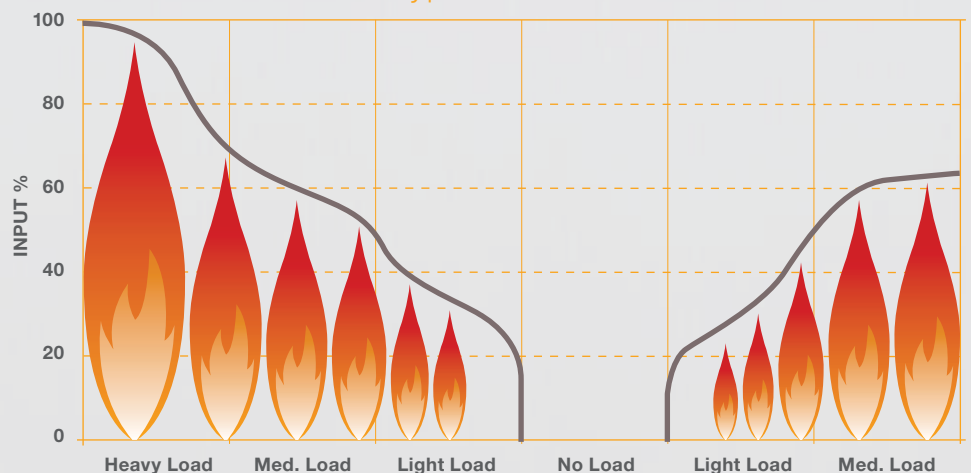
Simplicity and Reliability

- High recovery with low storage, supplies large amounts of hot water with low running costs
- Slide out burner tray for easy servicing
- Covered by unequalled service network and technical advisors

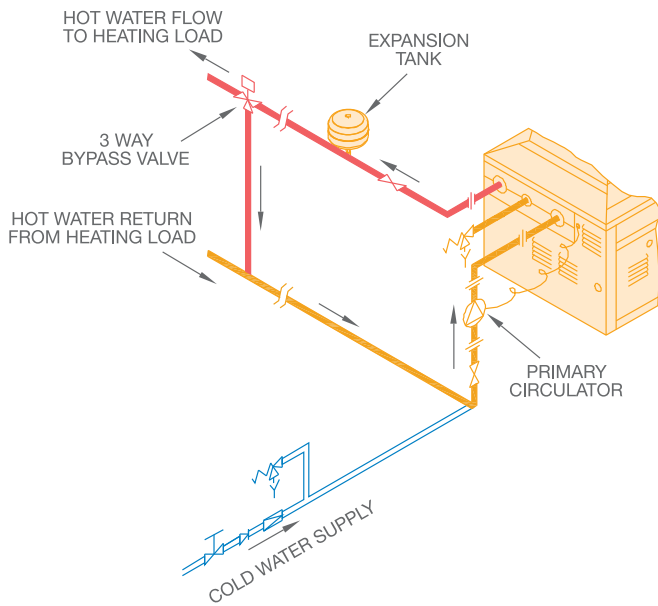
Versatile Applications

- Compact design suitable for low ceiling heights
- On/Off models provide heating for commercial hot water systems
- Modulating models are suitable for mechanical heating
- High (up to 90°C) and low temperature heating capable

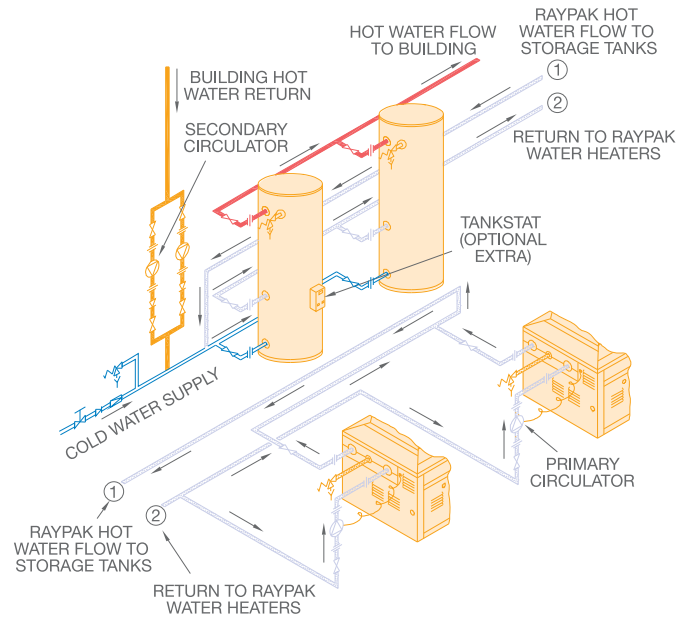
Raypak Modulation



Single Mechanical Heating System



Double Domestic Hot Water System



Options

- Left hand (normal) or right hand configurations
- Temperature and pressure gauges
- For difficult to reach locations, Raypak® can be supplied in knock down form for on site assembly (POA)
- Relay run and fault status for connection to BMS (standard on Type B models)
- Water flow switch (standard on Type B models)

Special features

- Slide out heat exchanger for easy servicing
- All Raypak® models except the 200 model are available with On/Off burners and all are available with modulating burners
- Additional storage tanks offer mains pressure performance
- Fast automatic response to temperature changes is provided by the optional outdoor Ambient Air Sensor controller
- Models from 538 up to 4224 can be connected to a building management system for monitoring
- Raypak models are an ideal heat source where system water temperatures of below 35°C are required
- The On/Off type water heaters can operate as low as 41°C without any condensation or sooting
- 538 to 4224 models not available in propane

Warranty*

- 5 years heat exchanger
- 1 year parts and labour

* **Conditions apply:** For full terms and conditions please contact Rheem or see Owner's Guide and Installation Instructions, available at www.rheem.com.au

RAYPAK PIPE SIZE AND PUMP SELECTION CHART

Model	Pump	Branch Size	Minimum Manifold Header Size Required (mm)			
			1 Unit	2 Units	3 Units	4 Units
	UPS Series					
280	32-80N	32mm	32/3	50/3	65/3	65/3
350	32-80N	40mm	40/3	50/3	65/3	80/3
430	32-80N	40mm	40/3	65/3	65/3	80/3
538	32-80N	50mm	50/3	65/3	80/3	100/3
658	32-80N	50mm	50/3	80/3	100/3	100/3
768	40-60/2B	50mm	50/3	80/3	100/3	100/3
868	40-60/2B	65mm	65/2	100/2	100/2	125/2
972 / 992	40-60/2B	65mm	65/3	100/3	100/3	125/3
1142 / 1182	50-120B	65mm	65/1	100/1	125/1	125/1
1242 / 1292	50-120B	65mm	65/2	100/2	125/2	125/2
1362 / 1412	50-120B	80mm	80/2	100/2	125/2	150/2
1662 / 1722	80-120B	80mm	80/2	125/2	125/2	150/2
1852 / 1922	80-120B	100mm	100/3	125/3	150/3	150/3
2004 / 2214	80-120B	100mm	100/1	125/1	150/1	-
2404	80-120B	100mm	100/1	125/1	150/1	-
2634	80-120B	100mm	100/2	125/2	-	-
2804 / 3164	80-120B	100mm	100/3	150/3	-	-
3304	80-120B	100mm	100/3	150/3	-	-
3694	80-120B	125mm	125/3	150/3	-	-
3804 / 4224	80-120B	125mm	125/3	-	-	-

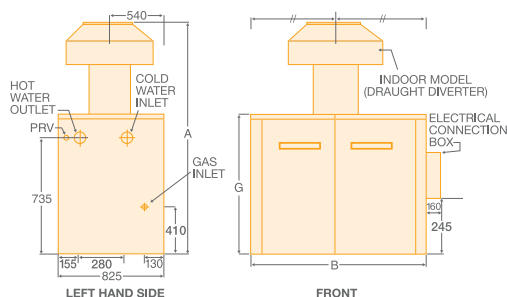
Note: TP series circulator is recommended for hard water areas in lieu of UPS series circulator

Manifold header sizes are minimum requirements for water heater performance

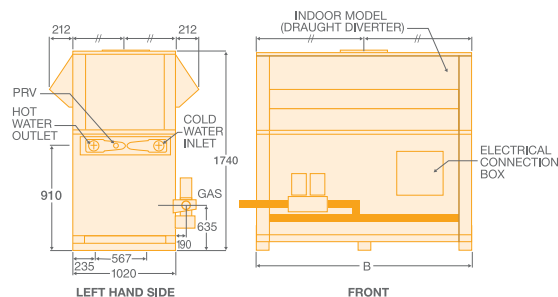
Pipe and pump sizing is for DHW only system. Header pipe sizing is based on a total length of 20m of primary flow and return piping and 20 bends, excluding equa-flow manifolds on storage tanks and heat pumps @ 1.2m/sec velocity.

RAYPAK[®] HOT WATER AND HEATING

Models 992, 1182, 1292, 1412, 1722, 1922 (Indoor)



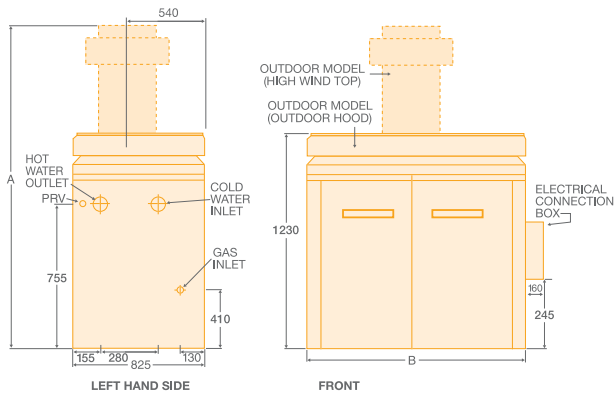
Models 2214, 2634, 3164, 3694, 4224 (Indoor)



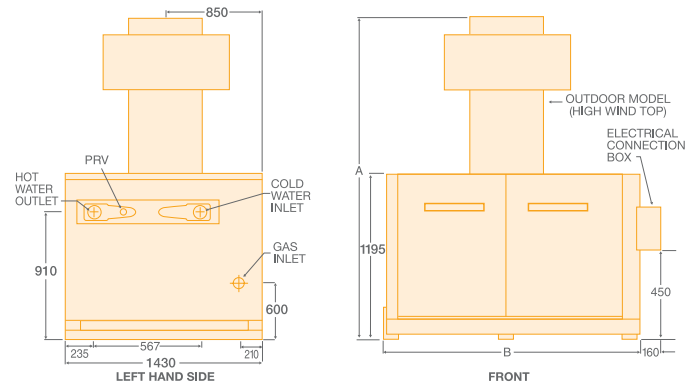
DIMENSIONS AND TECHNICAL DATA TABLE – INDOOR MODELS

Model		992	1182	1292	1412	1722	1922	2214	2634	3164	3694	4224
Natural – Input	MJ/h	999	1,186	1,289	1,412	1,719	1,926	2,215	2,636	3,165	3,692	4,224
– Output	kW	225	265	285	315	380	430	505	600	720	840	960
Dimensions												
A	mm	1,810	1,915	1,915	1,990	2,060	2,130	–	–	–	–	–
B	mm	1,330	1,510	1,615	1,740	2,070	2,270	1,550	1,780	2,060	2,350	2,640
G	mm	860	860	860	860	930	930	–	–	–	–	–
Flue Connection	mm	355	405	405	455	455	505	610	660	710	760	815
Weight	kg	310	330	360	390	440	460	625	700	780	860	940
Inlet/Outlet Connections		RC2½	RC2½	RC2½	RC2½	RC2½	RC2½	RC3	RC3	RC3	RC3	RC3
Gas Connection												
Natural – On / Off Models		R1½	R1½	R1½	R1½	R2	R2	R2	R2½	R2½	R3	R3
Natural – Modulating Models		R1½	R1½	R1½	R1½	R2	R2	R2	R2½	R2½	R3	R3
Relief Valve Connection												
On/Off Models		RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	R1¾	RC1	RC1	RC1
Modulating Models		RC¾	RC¾	RC¾	RC¾	RC1	RC1	RC1¼	RC1¼	RC1½	RC1½	RC1½
Electrical Rating 240V 50Hz	Watts	100	100	100	100	100	100	100	100	100	100	100
	Amps	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Min. Buffer Tank Capacity	Litres	410	650	650	650	650	820	975	975	975	1,230	1,300
Max. Storage Capacity	Litres	11,000	13,000	14,500	16,000	19,500	22,000	27,000	31,000	37,000	43,500	49,500
Natural Gas												
Litres Recovery Per Hour @	30°C rise	6,450	7,597	8,170	9,030	10,893	12,327	14,477	17,200	20,640	24,080	27,520
	40°C rise	4,838	5,698	6,128	6,773	8,170	9,245	10,858	12,900	15,480	18,060	20,640
	50°C rise	3,870	4,558	4,902	5,418	6,536	7,396	8,686	10,320	12,384	14,448	16,512
	60°C rise	3,225	3,798	4,085	4,515	5,447	6,163	7,238	8,600	10,320	12,040	13,760
	65°C rise	2,977	3,506	3,771	4,168	5,028	5,689	6,682	7,939	9,526	11,114	12,702
	70°C rise	2,764	3,256	3,501	3,870	4,669	5,283	6,204	7,372	8,846	10,320	11,794
	75°C rise	2,580	3,039	3,268	3,612	4,357	4,931	5,791	6,880	8,256	9,632	11,008
	80°C rise	2,419	2,849	3,064	3,386	4,085	4,623	5,429	6,450	7,740	9,030	10,320
	85°C rise	2,276	2,681	2,884	3,187	3,845	4,351	5,109	6,071	7,285	8,499	9,713
Flow Rate and Pressure Drop												
Max. Flow Rate												
Modulating (10°C rise)*	L/s	5.38	6.31	6.31	6.31	6.31	6.31	12.06	12.62	12.62	12.62	12.62
Pressure Drop	kPa	29	44	46	49	55	58	48	49	50	54	57
Max. Flow Rate												
On/Off (15°C rise)*	L/s	3.58	4.22	4.54	5.02	6.05	6.31	8.04	9.56	11.47	12.62	12.62
Pressure Drop	kPa	12	18	24	30	51	58	20	28	38	54	57
Min. Flow Rate												
(20°C rise)*	L/s	2.69	3.17	3.40	3.76	4.54	5.14	6.03	7.17	8.60	10.03	11.47
Pressure Drop	kPa	7	11	14	18	30	39	12	17	23	30	42

* Guide only.



* Two high wind tops per model



*Two high wind tops per model

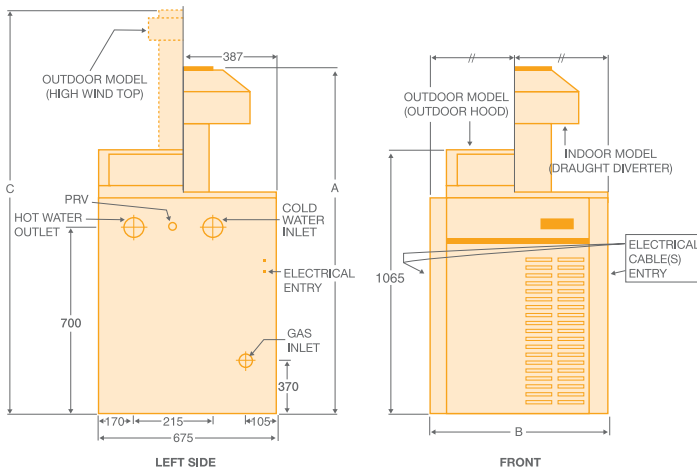
DIMENSIONS AND TECHNICAL DATA TABLE – OUTDOOR MODELS

Model		972	1142	1242	1362	1662	1852	2004	2404	2804	3304	3804
Natural – Input	MJ/h	976	1,142	1,242	1,357	1,657	1,854	2,004	2,404	2,804	3,304	3,804
– Output	kW	220	255	275	300	370	410	445	530	625	740	845
Dimensions												
A	mm	2,500	2,395	2,395	2,570	2,640	2,920	3,165	3,210	3,185	2,965	3,165
B	mm	1,330	1,510	1,615	1,740	2,070	2,270	1,550	1,780	2,060	2,350	2,635
Weight	kg	360	385	410	440	510	520	650	730	810	890	970
Inlet/Outlet Connections		RC2½	RC2½	RC2½	RC2½	RC2½	RC2½	RC3	RC3	RC3	RC3	RC3
Gas Connection												
Natural – On / Off Models		R1½	R1½	R1½	R1½	R2	R2	R2	RC2½	RC2½	RC2½	R3
Natural – Modulating Models		R1½	R1½	R1½	R1½	R2	R2	R2	RC2½	RC2½	R3	R3
Relief Valve Connection												
On/Off models		RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	RC1	RC1	RC1
Modulating models		RC¾	RC¾	RC¾	RC¾	RC1	RC1	RC1¼	RC1¼	RC1½	RC1½	RC1½
Electrical Rating 240V 50Hz	Watts	100	100	100	100	100	100	100	100	100	100	100
	Amps	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Min. Buffer Tank Capacity	Litres	410	650	650	650	650	820	975	975	975	1,230	1,230
Max. Storage Capacity	Litres	11,000	13,000	14,000	15,500	19,000	21,000	23,000	27,000	32,000	39,000	43,000
Natural Gas												
Litres Recovery Per Hour @	30°C rise	6,307	7,310	7,883	8,600	10,607	11,753	12,757	15,194	17,917	21,214	24,224
	40°C rise	4,730	5,483	5,913	6,450	7,955	8,815	9,568	11,395	13,438	15,910	18,168
	50°C rise	3,784	4,386	4,730	5,160	6,364	7,052	7,654	9,116	10,750	12,728	14,534
	60°C rise	3,153	3,655	3,942	4,300	5,303	5,877	6,378	7,597	8,958	10,607	12,112
	65°C rise	2,911	3,374	3,639	3,969	4,895	5,425	5,888	7,012	8,269	9,791	11,180
	70°C rise	2,703	3,133	3,379	3,686	4,546	5,037	5,467	6,512	7,679	9,092	10,382
	75°C rise	2,523	2,924	3,153	3,440	4,243	4,701	5,103	6,077	7,167	8,485	9,689
	80°C rise	2,365	2,741	2,956	3,225	3,978	4,408	4,784	5,698	6,719	7,955	9,084
	85°C rise	2,226	2,580	2,782	3,035	3,744	4,148	4,502	5,362	6,324	7,487	8,550
Flow Rate and Pressure Drop												
Max. Flow Rate												
Modulating (10°C Rise)*	L/s	5.26	6.09	6.31	6.31	6.31	6.31	10.63	12.62	12.62	12.62	12.62
Pressure Drop	kPa	27	43	46	49	55	58	45	49	53	57	60
Max. Flow Rate												
On/Off (15°C Rise)*	L/s	3.50	4.06	4.38	4.78	5.89	6.31	7.09	8.44	9.95	11.79	12.62
Pressure Drop	kPa	12	18	23	30	49	58	18	28	35	53	57
Min. Flow Rate												
(20°C rise)*	L/s	2.63	3.05	3.28	3.58	4.42	4.90	5.32	6.33	7.47	8.84	10.09
Pressure Drop	kPa	7	10	12	16	27	21	12	17	21	30	42

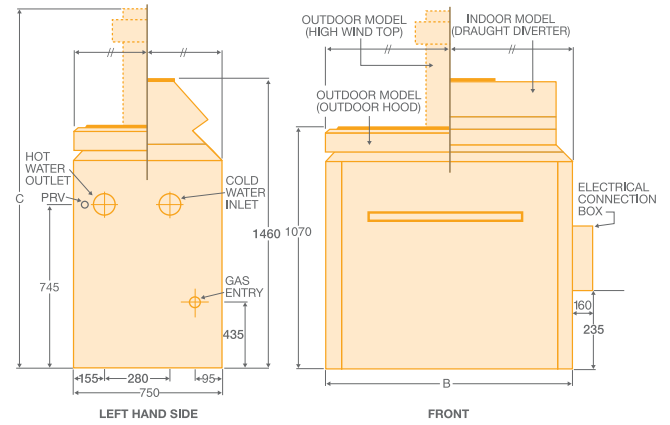
* Guide only.

RAYPAK[®] HOT WATER AND HEATING

Models 200, 280, 350, 430 (Indoor/Outdoor)



Models 538, 658, 768 & 868 (Indoor/Outdoor)



DIMENSIONS AND TECHNICAL DATA TABLE – INDOOR/OUTDOOR MODELS

Model		200	280	350	430	538	658	768	868
Natural – Input	MJ/h	196	278	343	420	539	661	765	870
– Output	kW	44	62	76	94	120	150	170	195
Propane – Input	MJ/h	185	261	323	396	–	–	–	–
– Output	kW	41	58	72	88	–	–	–	–
Dimensions									
A	mm	1,625	1,715	1,715	1,805	–	–	–	–
B	mm	465	570	655	745	830	955	1,055	1,160
C	mm	1,955	2,240	2,035	2,145	2,130	2,255	2,255	2,355
Flue Connection	mm	175	205	225	255	255	305	305	355
Weight	kg	91	93	103	107	195	200	250	260
Inlet/Outlet Connections		RC1½	RC1½	RC1½	RC1½	RC2½	RC2½	RC2½	RC2½
Gas Connection									
Natural – On / Off Models		NA	RP¾	RP¾	RP¾	R1	R1½	R1½	R1½
Natural – Modulating Models		RP1	RP1	RP1	RP1	R1	R1	R1½	R1½
Propane – On / Off Models		NA	RP¾	RP¾	RP¾	–	–	–	–
Propane – Modulating Models		RP¾	RP¾	RP¾	RP¾	–	–	–	–
Relief Valve Connection									
On/Off models		NA	RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	RC¾
Modulating models		RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	RC¾	RC¾
Electrical Rating 240V 50Hz	Watts	50	50	50	50	50	50	50	50
	Amps	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Min. Buffer Tank Capacity	Litres	325	325	325	325	325	325	325	325
Max. Storage Capacity	Litres	2,000	3,000	4,000	4,800	6,000	7,500	8,500	10,000
Natural Gas									
Litres Recovery Per Hour @	30°C rise	1,250	1,769	2,187	2,683	3,440	4,300	4,873	5,590
	40°C rise	937	1,327	1,640	2,012	2,580	3,225	3,655	4,193
	50°C rise	750	1,061	1,312	1,610	2,064	2,580	2,924	3,354
	60°C rise	625	884	1,094	1,342	1,720	2,150	2,437	2,795
	65°C rise	577	816	1,010	1,238	1,588	1,985	2,249	2,580
	70°C rise	536	758	937	1,150	1,474	1,843	2,089	2,396
	75°C rise	500	708	875	1,073	1,376	1,720	1,949	2,236
	80°C rise	469	663	820	1,006	1,290	1,613	1,828	2,096
	85°C rise	441	624	772	947	1,214	1,518	1,720	1,973
Flow Rate and Pressure Drop									
Max. Flow Rate									
Modulating (10°C Rise)*	L/s	1.04	1.47	1.82	2.24	2.87	3.58	4.06	4.66
Pressure Drop	kPa	3	8	13	17	6	10	14	22
Max. Flow Rate									
On/Off (15°C Rise)*	L/s	0.69	0.98	1.22	1.49	1.91	2.39	2.71	3.11
Pressure Drop	kPa	3	4	6	8	3	4	6	8
Min. Flow Rate									
(20°C rise)*	L/s	0.52	0.74	0.91	1.12	1.43	1.79	2.03	2.33
Pressure Drop	kPa	3	3	3	4	3	3	4	5

* Guide only.



Raypak® indoor gas water heaters are designed for connection to a flue system in accordance with the requirements of AS/NZS 5601.1.

GAS PRESSURE		200-430	538-4224
Natural	Minimum	kPa 1.13	1.13
	Test Point	kPa 0.77	0.92
	Maximum	kPa 3.50	4.00
Propane	Minimum	kPa 2.75	-
	Test Point	kPa 2.75	-
	Maximum	kPa 3.50	-

THERMOSTAT SETTINGS			
Modulating	Maximum	°C	95
	Factory set	°C	78
	Minimum	°C	44
On/Off	Maximum	°C	80
	Factory set	°C	50
	Minimum	°C	44

¹³ CLEARANCES COMBUSTIBLES (mm)					
Model	Back	Front	Left	Right	Ceiling
200 to 430	500	750	600	500	1,200
538 to 1922	600	750	600	600	1,200
2004 to 4224	600	1,200	600	600	1,200

¹³ CLEARANCES NON COMBUSTIBLES (mm)					
Model	Back	Front	Left	Right	Ceiling
200 to 430	150	750	600	150	1,200
538 to 1922	150	750	600	600	1,200
2004 to 4224	300	1,200	600	600	1,200

ACCESSORIES FOR RAYPAK COMMERCIAL GAS WATER HEATERS		
Accessories	Standard	Optional
Pump Run on Timer	All modulating	All On/Off
Tankstat	-	200 to 4224
Hot Surface Ignition (HSI)	200 to 430	-
Electronic Ignition	538 to 4224	-
Water Flow Switch	538 to 4224	-
Relay Run and Fault Status	538 to 4224	-
High Wind Top (outdoor installations only)	538 to 3804	200 to 1852
Left Hand Water and Gas Connections	200 to 4224	-
Right Hand Water Connections	-	200 to 430
Right Hand Water and Gas Connections	-	538 to 4224

MINIMUM SUPPLY PRESSURE						
System design and pump selection is critical when water heaters are connected to a low pressure water supply. Refer to the table below for minimum pressure requirements for Grundfos UPS series pumps. Minimum pressure requirements for TP series pumps depend on system characteristics and need to be calculated. Contact your pump supplier for details.						
Pump	Model	Minimum Inlet Pressure Required (m) at Operating Temperature				
		75°C	80°C	85°C	90°C	95°C
UPS32-80N	280, 350, 430, 538, 658	0.5	0.5	0.5	3.0	5.0
UPS40-60/2B	768, 868, 972, 992	1.5	2.5	3.5	4.5	7.0
UPS50-120B	1142, 1182, 1242, 1292, 1362, 1412	4.0	5.0	6.0	7.0	9.0
UPS80-120B	1662, 1722, 1852, 1922, 2004, 2214, 2404, 2634, 2804, 3164, 3304, 3694, 3804, 4224	16.0	17.0	18.0	19.0	20.5

WATER SUPPLY AND RELIEF VALVE SETTINGS				
Burner Type	Models		On/Off	Modulating
			All	200-430
Relief Valve Setting				
Potable Hot Water	kPa	850 (700) [†]	850 (700) ^{† 15}	850 (700) ^{† 15}
Mechanical Heating	kPa	-	310	415
Expansion Control Valve (ECV ¹⁴) Setting				
Potable Hot Water	kPa	700 (550) [†]	700 (550) ^{† 15}	700 (550) ^{† 15}
Mechanical Heating	kPa	-	-	-
Maximum Supply Pressure without ECV ¹⁴ fitted				
Potable Hot Water	kPa	680 (550) [†]	680 (550) ^{† 15}	680 (550) ^{† 15}
Mechanical Heating	kPa	-	240	330
with ECV ¹⁴ fitted				
Potable Hot Water	kPa	550 (450) [†]	550 (450) ^{† 15}	550 (450) ^{† 15}
Mechanical Heating	kPa	-	-	-

RAYPAK MODEL NUMBERS						
The following information should be supplied when ordering Raypak water heaters						
B	0430	N	C	O	/	ID
Water Heater	Approx Thermal Input*	N = Natural Gas P = Propane	Copper Heat Exchanger	O = On/Off M = Modulating		ID = Indoor HWT = High Wind Top

¹³ Excludes flue terminal clearances. Refer to AS/NZS 5601.1.

¹⁴ Expansion Control Valve is not supplied with the water heater.

¹⁵ An 850kPa relief valve can be fitted to modulating water heaters used in potable hot water applications.

[†] Figures in brackets are to be used if a Wilson stainless steel storage tank is utilised in the system

Note: *last digit designates series type.