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Section 5 Guide to choosing a radiator

The correct sized radiator

Choosing the correct size radiator is important. This information sheet provides you with a quick and easy method to estimate the best-sized **Biasi** radiator for your home. When ordering **Biasi** radiators, please ask one of Hunt's heating engineers to check your calculations.

What to do:

- To estimate the size of the radiator required, you need to know how much heat is required to maintain a comfortable room temperature.
- If you have a house plan use the information on the plan, if not fill out the details on our **Heat Load Calculation Sheet**.
- Use the chart below to estimate the heat required for each room.

Results shown in kW of heat

		Room length in metres												
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8
Room Width in metres	8	1.9	2.3	2.8	3.3	3.7	4.2	4.6	5.1	5.6	6.2	6.5	6.9	7.5
	7.5	1.8	2.2	2.6	3.0	3.5	4.0	4.4	4.8	5.3	5.6	6.1	6.5	
	7	1.7	2.0	2.4	2.9	3.3	3.6	4.1	4.5	4.8	5.3	5.6		
	6.5	1.5	1.9	2.2	2.6	3.0	3.4	3.7	4.2	4.5	4.8			
	6	1.4	1.8	2.1	2.4	2.8	3.2	3.5	3.7	4.2				
	5.5	1.3	1.7	1.9	2.2	2.5	2.9	3.2	3.5					
	5	1.2	1.4	1.8	2.0	2.3	2.6	2.9						
	4.5	1.1	1.3	1.5	1.9	2.1	2.3							
	4	0.9	1.2	1.3	1.7	1.9								
	3.5	0.8	1.0	1.2	1.4									
	3	0.7	0.9	1.0										
	2.5	0.6	0.7											
	2	0.4												

The above chart is based on room assumptions of:

- The room being insulated to the new building code.
(If not, **add 20%**).
- The room having **25% or less of its walls as windows**.
(If the room has up to 50% of its walls as windows, **add 25%**).¹
- The room ceiling height being **2.4 metres**.
(If higher add a percentage increase as below)
3 metre high **add 25%** 3.6 metre high **add 50%**

Example: Room size 5 metres wide by 4 metres long with ceiling height 3 metres
From the chart: Heat output = **2.3 kW** + **25%** for 3 metre ceiling = **2.88 kW**

¹ Windows are a significant heat loss factor, for very large windows where the room has over 50% of its walls as window space, please consult with a Hunt Heating, heating engineer.



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Select a radiator

From the radiator size/output charts, select a radiator of equal or greater output. **i.e.:** from the **600** high double steel panel radiators, select a panel **1200** long which gives **3.061kW** of heat. Alternatively, two double **600** high x **600** long panels which give **1.530 kW** of heat x 2 could also be selected.

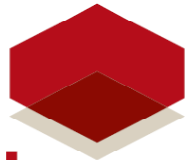
Notes:

- **Biasi** Radiators are available in heights of - 300, 500, 600 and 900 mm high. The most popular height is 600 high. They are available as single, compact, double and triple output panels.
- Single panels fit snugly to the wall.
- Double panels are approximately half the length for a given heat output, taking up less wall space, making them a useful option for larger rooms. Installing two or more smaller radiators spaced around the room, rather than one large radiator can be preferable.
- Low 300 high radiators are ideal under windows. Traditionally radiators should be placed under windows on an outside wall rather than on an inside wall to minimise draughts. This, however, is not a critical factor.
- Tall 900 high radiators are ideal when wall space is severely limited.
- Heated towel rails are a great dual purpose option for bathrooms.
- Under sizing radiators is poor economy, a radiator can be adjusted to give less heat, but cannot give more than its rated capacity.

Design and system conditions

Notes:

- Any selected **HUNT** radiators must only be used with a recirculating pump (circulator) in a hydronic heating system.
- Radiators will be **hot** to touch when operating at maximum capacity.
- Radiator heat emission factors are based on a ΔT of **60°C** between mean water temperature and room temperature.
- The surface temperature of the radiator may be about 5°C lower than the boiler flow temperature, so consideration must be made to the room's occupants and their ability to understand or know that the radiator is hot to touch.
- If this is a safety concern then consideration should be given to low surface temperature radiators that are available from Hunt Heating.



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The heat correction factor

Use the table below to select the correct size panel size which has different water or room temperatures:

Flow water Temp	Room Temp °C	Correction Factor C											
		Return Water Temperature °C											
		30	35	40	45	50	55	60	65	70	75	80	85
90°C	24	3.08	2.36	1.97	1.71	1.53	1.38	1.27	1.17	1.10	1.03	0.98	0.93
	22	2.66	2.13	1.81	1.59	1.43	1.31	1.20	1.12	1.05	0.99	0.94	0.89
	20	2.35	1.94	1.68	1.49	1.35	1.24	1.14	1.07	1.00	0.95	0.90	0.86
	18	2.11	1.78	1.56	1.40	1.27	1.17	1.09	1.02	0.96	0.91	0.87	0.83
	15	1.83	1.59	1.41	1.28	1.18	1.09	1.02	0.95	0.90	0.86	0.82	0.78
	12	1.62	1.43	1.29	1.18	1.09	1.01	0.96	0.90	0.85	0.81	0.77	0.74
85°C	24	3.30	2.52	2.10	1.82	1.62	1.46	1.34	1.24	1.16	1.09	1.03	
	22	2.84	2.27	1.92	1.69	1.52	1.38	1.27	1.18	1.11	1.05	0.99	
	20	2.50	2.06	1.78	1.58	1.42	1.30	1.21	1.12	1.06	1.00	0.95	
	18	2.24	1.89	1.65	1.48	1.34	1.24	1.15	1.07	1.01	0.96	0.91	
	15	1.94	1.68	1.49	1.35	1.24	1.14	1.07	1.00	0.95	0.90	0.86	
	12	1.71	1.51	1.38	1.24	1.14	1.06	1.00	0.94	0.89	0.85	0.81	
80°C	24	3.56	2.70	2.24	1.94	1.72	1.56	1.42	1.32	1.24	1.16		
	22	3.05	2.42	2.05	1.80	1.61	1.46	1.35	1.25	1.18	1.11		
	20	2.67	2.20	1.89	1.67	1.51	1.38	1.27	1.19	1.12	1.06		
	18	2.38	2.01	1.75	1.57	1.42	1.31	1.21	1.13	1.07	1.01		
	15	2.08	1.78	1.58	1.42	1.30	1.21	1.12	1.06	1.00	0.95		
	12	2.13	1.81	1.58	1.43	1.31	1.20	1.12	1.05	0.99	0.94		
75°C	24	3.66	2.92	2.41	2.08	1.85	1.66	1.52	1.41	1.32			
	22	3.29	2.50	2.20	2.20	1.72	1.56	1.43	1.34	1.25			
	20	2.87	2.36	2.02	2.02	1.61	1.47	1.35	1.27	1.19			
	18	2.58	2.14	1.87	1.87	1.51	1.38	1.28	1.20	1.13			
	15	2.20	1.89	1.67	1.67	1.38	1.27	1.19	1.12	1.06			
	12	1.82	1.68	1.52	1.38	1.27	1.18	1.11	1.05	0.99			
70°C	24	4.22	3.17	2.61	2.25	1.99	1.79	1.64	1.52				
	22	3.57	2.82	2.37	2.07	1.85	1.67	1.54	1.43				
	20	3.11	2.63	2.17	1.91	1.72	1.57	1.45	1.35				
	18	2.75	2.30	2.00	1.78	1.61	1.47	1.37	1.28				
	15	2.35	2.02	1.79	1.61	1.47	1.35	1.27	1.19				
	12	2.05	1.90	1.61	1.46	1.35	1.25	1.18	1.11				
65°C	24	4.65	3.47	2.85	2.44	2.15	1.94	1.78					
	22	3.91	3.07	2.58	2.24	1.99	1.81	1.67					
	20	3.38	2.75	2.35	2.07	1.85	1.69	1.57					
	18	2.98	2.49	2.15	1.91	1.73	1.59	1.47					
	15	2.53	2.17	1.91	1.72	1.57	1.45	1.35					
	12	2.20	1.82	1.72	1.56	1.48	1.43	1.25					
60°C	24	5.19	3.86	3.14	2.68	2.36	2.13						
	22	4.33	3.38	2.82	2.45	2.18	1.98						
	20	3.72	3.01	2.56	2.24	2.02	1.84						
	18	3.28	2.71	2.34	2.07	1.87	1.72						
	15	2.76	2.35	2.03	1.85	1.69	1.57						
	12	2.37	2.07	1.85	1.67	1.54	1.43						

Example:

Required 2.88 kW

Heating conditions
 Flow temp **80°C**
 Return temp **65°C**
 Ambient air **22°C**

Corrected Radiator
 $2.88 \text{ kW} \times 1.25 = 3.6$
 kW standard output
 required.

Select the radiator size
 of, **600 / E22 / 1600**

4.081 kW being the
 closest to the panel
 output required.

Note.

1. Outputs increase by approximately 2% when top grilles are not fitted.
2. Correction factor for other temperature conditions available on request.

Hunting Heating offer the Italian *Pintossi* and *Giacomini* plus the German *Heimeier* radiator valves for installation with the radiators. Together these valves cover all the requirements for any hydronic heating system offering quality, performance and value for money.

It is important to check carefully how the connections are made to the pipe work to give a permanent leak free connection. Hunt Heating recommends the use of thermostatic heads with radiators providing a high degree of control and comfort to each room.

Hunt Heating reserve the right to vary products at any time without prior notice to make improvements without affecting the basic characteristics. Therefore this information cannot be considered as a contract relative to third parties.



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If you plan to run the boiler at 80°C with a return temperature of 65°C with a room temperature of 22°C then the radiator should be re-sized to accommodate the lower water temperatures.

Example to calculate the heat correction factor and hence the new radiator size.

E.g. using the same **2.88 kW** heat losses then find the correct radiator size from the chart.

80°C – 65°C Water with a room temperature of 22°C gives a factor of **1.25**

Multiply this factor by the heat required to find the output required from a “standard” radiator.

This becomes $2.88 \text{ kW} \times 1.25 = \mathbf{3.6 \text{ kW}}$

The 600 high double panel radiator best suited would be 1600 long with a “standard” output of 4.081kW

Alternatives could be: one (1) double panel 900 high x 1100 long
Or two (2) - double panels 600 high x 800 long

There are many other combinations available. Hunt Heating has the best range of ex-stock panel radiators in Australia.

5.5 Alternative heat load calculation method

The following formula can also be used to calculate the heat load of a room:

Room - $\frac{\text{Length} \times \text{width} \times \text{height} \times \text{Factor}}{1000}$

Where factor = for bedrooms **40**, for living rooms **50**

Example: Room size 5 metres wide by 4 metres long with ceiling height 3 metres

Bedroom - $5 \times 4 \times 3 \times \mathbf{40} = 2400 \text{ Watts}$ or **2.4 kW**

Lounge - $5 \times 4 \times 3 \times \mathbf{50} = 3000 \text{ Watts}$ or **3.0 kW**

This means a living room would be rated warmer than a bedroom.