

Energy Efficient Pool Heating Solutions

Towards Zero

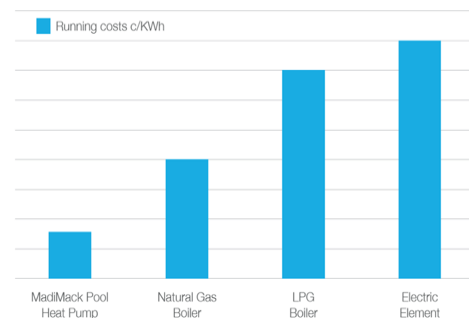
Thank you for enquiring with Madimack, we are the leading specialists when it comes to energy efficient heat pump systems for swimming pools throughout Australia.

This heating evaluation will give you the information you need to make a decision and find the right heater for your needs and swim habits, a heat pump is known as a lifestyle changer and significantly increases the usability of your pool with constant pool temperatures.

Madimack are a specialist heating system design and manufacturer and do not do installations. We provide training and support to local installers in all territories to ensure the unit is installed correctly and optimised operationally. Allowing you to use the installer of your choice or we can recommend one for you.

Heat pump technology offers extremely high efficiencies and is a source of renewable energy. It works by absorbing the solar heat from the surrounding air with an electrical pump to transfer it into the pool water. This technology makes it the ideal and most economic solution for maintaining pool temperatures and a great option for solar PV compatibility.

1. Pool information and location
2. Heat pump size recommended
3. Heat pump descriptions
4. Heat pump run times
5. Running costs and system maintenance
6. Solar power matching times
7. Ventilation requirement examples
8. Plumbing example



This report is a generic evaluation to be able to determine an estimate cost and unit size for your pool. Please consult with your pool heating installer for further information and based on your specific pool conditions

We hope you enjoy this information and we look forward to creating the garden oasis you dream of, with



RESORTS



WELLNESS
CENTRES



HOTELS



PUBLIC POOLS



SCHOOLS



RESIDENTIAL

Your Pool Heating Evaluation

Information Submitted

Customer

Name Customer
Postcode 4000
Weather Data Sydney

Pool

Length 6
Width 3.00
Average Pool depth 1.5
Volume (L) 27,000

Shading Level 25%
Wind level low
Indoor pool no
Infinity Edge m2 0

Swim Conditions

Pool Temperature 30
Pool Type Residential

Other

Solar PV 5
Solar Heating No
Electricity Cost 24



Unheated swimming pool temperatures vary throughout the year, mostly due to the drop in ambient air temperature throughout the night. Therefore it is recommended, where possible, to use a pool heat cover when the pool is not in use.

With a couple of cloudy days, a noticeable drop of temperature can deter even the toughest of kids. It is estimated that most swimming pools without heating are only used for 3 months of the year from December to February.

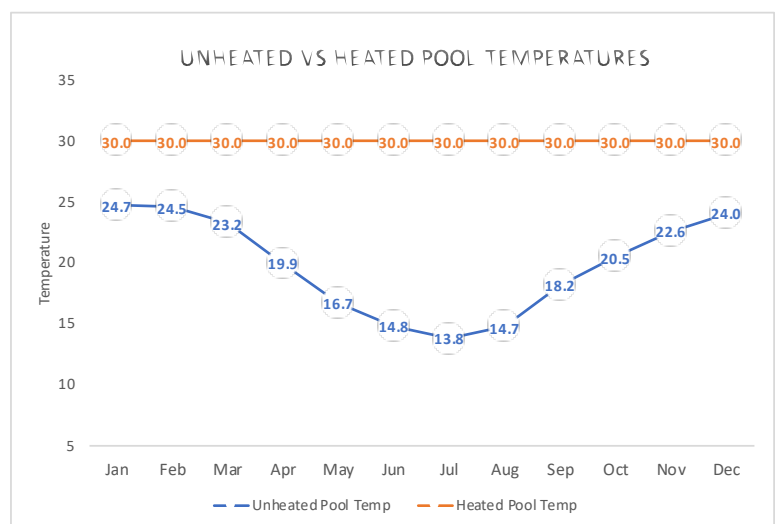
Here is a typical average water temperature chart based on the metropolitan weather data closest to you, and a comparison on the heating temperature you wish to have. Note that our heat pumps can both heat and cool pools if required and ideal swimming temperatures are estimated to be between 26 and 28 degrees

If you would like to amend any of your data please let us know. We will be more than happy to adjust it and recalculate the results.. We understand pool heating is a big decision, and we are here to assist you every step of the way

A heated pool.....

- Extends the swim season
- Is more enjoyable to swim in
- Can be used for exercise or therapy
- Warm waters are stress reducing
- Great for muscles and joints
- Increases property value

Sydney



Heat Pump Recommendations

Choose the lifestyle you want. Do you wish to extend the summer season or to swim all year round? The choice is yours.

Below you can find our recommendations based on the months/season you wish to swim, these are based on generic data and your installer should be able to determine in more detail the exact unit which suits your pool.

There are a couple of choices below which also include whether you use a pool cover or not, it is recommended where possible to use a pool cover to reduce energy loss and reduce evaporation. It may also allow you to use a smaller heater.

		MOST POPULAR			
		SOLAR ALTERNATIVE 5 months (Nov-March)	EXTENDED SUMMER 7 months (Oct-April)	SHOULDER 9 months (Sept-May)	ALL YEAR ROUND 12 months
 SUMMER ECO	When a cover is used Summer Eco 9kW \$2,668	When a cover is used Summer Eco 13kW \$3,839	When a cover is used Summer Eco 20kW \$5,940	When a cover is used Summer Eco 24kW \$7,645	
	When a cover isn't used Summer Eco 16kW \$4,664	When a cover isn't used Summer Eco 20kW \$5,940	When a cover isn't used Summer Eco 2 x 20 \$11,880	When a cover isn't used Summer Eco 2 x 24 \$15,290	
 ELITE SILENT	When a cover is used Elite Silent 11 kW \$4,356	When a cover is used Elite Silent 13 kW \$5,060	When a cover is used Elite Silent 21 kW \$7,975	When a cover is used Elite Silent 28 kW \$9,713	
	When a cover isn't used Elite Silent 17 kW \$6,490	When a cover isn't used Elite Silent 21 kW \$7,975	When a cover isn't used Elite Silent 35kW \$12,958	When a cover isn't used Elite Silent 2 x 21 \$15,950	

* All prices above are inclusive of GST

* Price does not include delivery (State capital metro areas \$100)

* Price does not include installation or handover

* Price indicated may change over time please contact your local installer for an up to date quote

* When a cover is used is based on a thermal blanket covering the pool for 20 hours with use of the for 2-3 hours

With the purchase of any Madimack Pool Heat Pump enjoy these extra benefits:

- Energy optimisation with personalised monthly on/off times
- Video support for commissioning and optimisation



Heat Pump Units and Specifications



To view the latest specifications and dimensions please click the image to the left or visit

www.madimack.com.au/brochures

Summer Eco

Efficient, stable and powerful pool heater. With a 30% slimmer and smaller profile combined with the black casing this unit disappears into the garden. With all the latest technology including

- Inverter compressor and fan
- Six models up to 24kW
- Quiet and 2 speed operation
- Anti corrosion ABS casing
- Stainless steel screws
- Independently TuV tested
- Operation to -10 degrees
- Auto-defrost function
- Up to 40 degrees set point
- Built in flow and safety system
- Extra large heat sink
- Black heat absorbing colour



Elite Silent Series

The Elite Silent Series comprises of all the best you can ask for in a pool heater. Utilising the latest stepless inverter technology to create world class efficiencies and quieter operation. With a unique design and up to 28kW in single phase you can be sure to heat your pool all-year round.

- Inverter compressor and fan
- Six models up to 28kW
- Quiet and 2 speed operation
- Unique design with back discharge
- Stainless steel screws
- Operation to -15 degrees
- Auto-defrost function
- Up to 40 degrees set point
- Built in flow and safety system
- Extra large heat sink
- Black heat absorbing colour



	Warranty			
	Heat Exchanger	Compressor	Parts	On-site labour
Summer Eco	25	3	2	2
Elite Silent	25	5	4	2

Heat Pump Run Times

A larger heat pump can always be chosen as an upgrade to have faster heat up times or to match with solar generation. In some cases where power may be a problem where the heat pump will go, a smaller unit can be used in combination with a Madimack Single Pump Control Box* to run up to 24hrs and utilize the same pump system as your filtration. This can save you money on buying a separate pump and energy costs on running a separate pump. Most often the pump controller is recommended for all year round swimming.

Below you can view all the run times for our full range for you to make a concise and easy decision.

The table shows the different heater sizes and the approximate amount of time they must run per day and on a monthly basis based on the ambient air temperature.

Please note initial heat up times can be up to seven days depending on chosen month of heat up and heater size. **All year round season**

*Madimack Control Box sold separately

With a cover

	Heater sizes					
	9	13	16	20	24	2 x 20
	kW heat per day	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.
January	38	5	3	3	2	2
February	40	5	4	3	2	2
March	50	7	5	4	3	3
April	76	11	7	6	5	4
May	101	16	11	9	7	6
June	115	20	14	11	9	8
July	123	22	15	13	10	8
August	116	20	14	11	9	8
September	89	14	10	8	6	5
October	70	11	7	6	5	4
November	54	8	5	4	3	3
December	43	6	4	3	3	2
Max Input (A)		9.5	12.5	17	19.5	20
Max input (kW)		1.5	2	2.6	3.3	3.8

	Heater sizes					
	11	13	17	21	28	35
	kW heat per day	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.
January	38	4	3	3	2	2
February	40	4	4	3	2	2
March	50	5	5	4	3	2
April	76	9	7	6	5	3
May	101	13	11	8	7	5
June	115	16	14	11	9	6
July	123	18	15	12	10	7
August	116	16	14	11	9	6
September	89	11	10	7	6	4
October	70	9	7	6	5	3
November	54	6	5	4	3	2
December	43	5	4	3	2	2
Max Input (A)		10	12	15	17	20
Max input (kW)		1.7	2	2.5	3.15	3.7

Without a cover

	Heater sizes					
	9	13	16	20	24	2 x 20
	kW heat per day	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.
January	76	10	7	6	4	4
February	79	10	7	6	5	4
March	100	13	9	8	6	5
April	152	22	15	12	10	8
May	202	32	22	18	14	12
June	231	40	28	23	18	15
July	246	44	31	25	20	17
August	232	40	28	23	18	15
September	178	28	19	16	13	10
October	141	21	15	12	10	8
November	108	15	11	9	7	6
December	86	12	8	7	5	4
Max Input (A)		9.5	12.5	17	19.5	20
Max input (kW)		1.5	2	2.6	3.3	3.8

	Heater sizes					
	11	13	17	21	28	35
	kW heat per day	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.	Run-time hrs.
January	76	8	7	5	4	3
February	79	8	7	5	4	3
March	100	11	9	7	6	4
April	152	18	15	11	9	7
May	202	26	22	17	14	10
June	231	33	28	21	17	13
July	246	36	31	24	19	14
August	232	33	28	21	17	13
September	178	23	19	15	12	9
October	141	17	15	11	9	7
November	108	13	11	8	7	5
December	86	9	8	6	5	4
Max Input (A)		10	12	15	17	20
Max input (kW)		1.7	2	2.5	3.15	3.7

Please note the above charts are how many hours the heat pump must run per day and do not indicated the heat up time required from cold to reach the set temperature.

For further information about initial heat up times and running the heat pump for the first time please see Madimack's FAQ at www.Madimack.com.au

Running Costs and Maintenance

With a combined solar PV system your bills could be zero, see your personalised solar compatibility on the next page

Heat pumps can save you money on your pool heating. By using heat pump technology you are using a source of renewable energy as it absorbs the energy from the surrounding air.

Inverter heat pumps have an extremely high efficiency output with an average coefficient of performance of 10 meaning for every 1kW of energy input up to 10kW of heat energy output is passed into the pool. On days of high humidity the COP can reach 15.

Heat pumps are known for their long lifetime and this is shown by our extensive 25-year warranty on the heat exchanger, and extensive warranty on all parts.

A heat pump also requires very little maintenance throughout its lifetime. Once the unit is set up correctly, all that is required is ensuring the area around the unit is cleared from debris regularly with good airflow maintained.

Inverter Vs Standard On/Off

Save up to \$350 or more per year when using the new inverter pool heating model compared to older on/off technology.

40,000L litre pool 24/7 @ 28°C Sydney Climate

Gas and Electric Element

Save \$1500 or more when it is compared to a gas pool heating system
Save \$5000 or more when compared with an electric element system

40,000L litre pool 24/7 28°C Sydney Climate

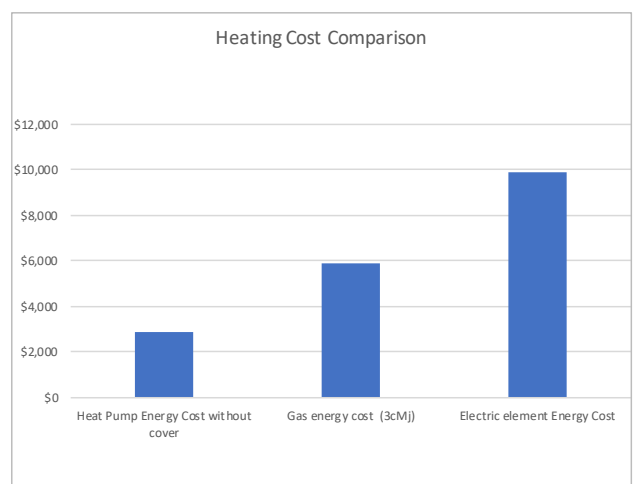
Same Filtration Pump

Continue saving money on energy by using the same filtration pump
No need to buy a second pump or require running it by using a pump controller.



PERSONALISED ENERGY COST ESTIMATION

Sydney				
Running cost comparison				
	Heat pump energy cost with cover	Heat pump energy Cost without cover	Gas energy cost per month (3cMj)	Electric element energy cost per Month
January	\$50	\$79	\$245	\$408
February	\$52	\$103	\$256	\$427
March	\$68	\$134	\$324	\$540
April	\$109	\$216	\$491	\$819
May	\$160	\$317	\$655	\$1,091
June	\$203	\$402	\$747	\$1,246
July	\$225	\$446	\$797	\$1,329
August	\$204	\$404	\$751	\$1,251
September	\$141	\$278	\$575	\$959
October	\$108	\$214	\$457	\$761
November	\$78	\$153	\$349	\$581
December	\$59	\$116	\$279	\$466
Total cost per year	\$1,457	\$2,862	\$5,926	\$9,877



In the above chart you can see the approximate costs of the pool heat pump per month. This is heating the pool up everyday and having a temperature set point reached. If you decide not to swim the whole year simply add up the months which you expect to heat the pool. Note that if you go for a larger pool heat pump the running costs will be same but heat up times will be faster. For more information please contact Madimack at sales@madimack.com.au or see our blog post online about pool heat up times.

Solar Matching

Heat your pool for free

When combined with a correctly sized solar energy system the running costs can be zero.

The big advantage of a heat pump over solar pool heating is the available roof space that would have had the solar heating system on it can now be generating electricity which can be used when the heat pump is not being used. For example, you can heat your house from your air conditioner in winter or use the clothes dryer guilt free.

With an ever-growing industry of PV solar installations throughout Australia we are proud to provide detailed information on heating times to really optimise your energy costs.

Optimum on/off timers means your heat pump can be tailored to your circumstances and production. If you're thinking about solar, we have a nationwide network of installers who can bundle it all together for the most efficient and consistent heating you can get your hands on.



With a cover

Heat Pump kW 28

Month April

Run Time (hr) 3.47

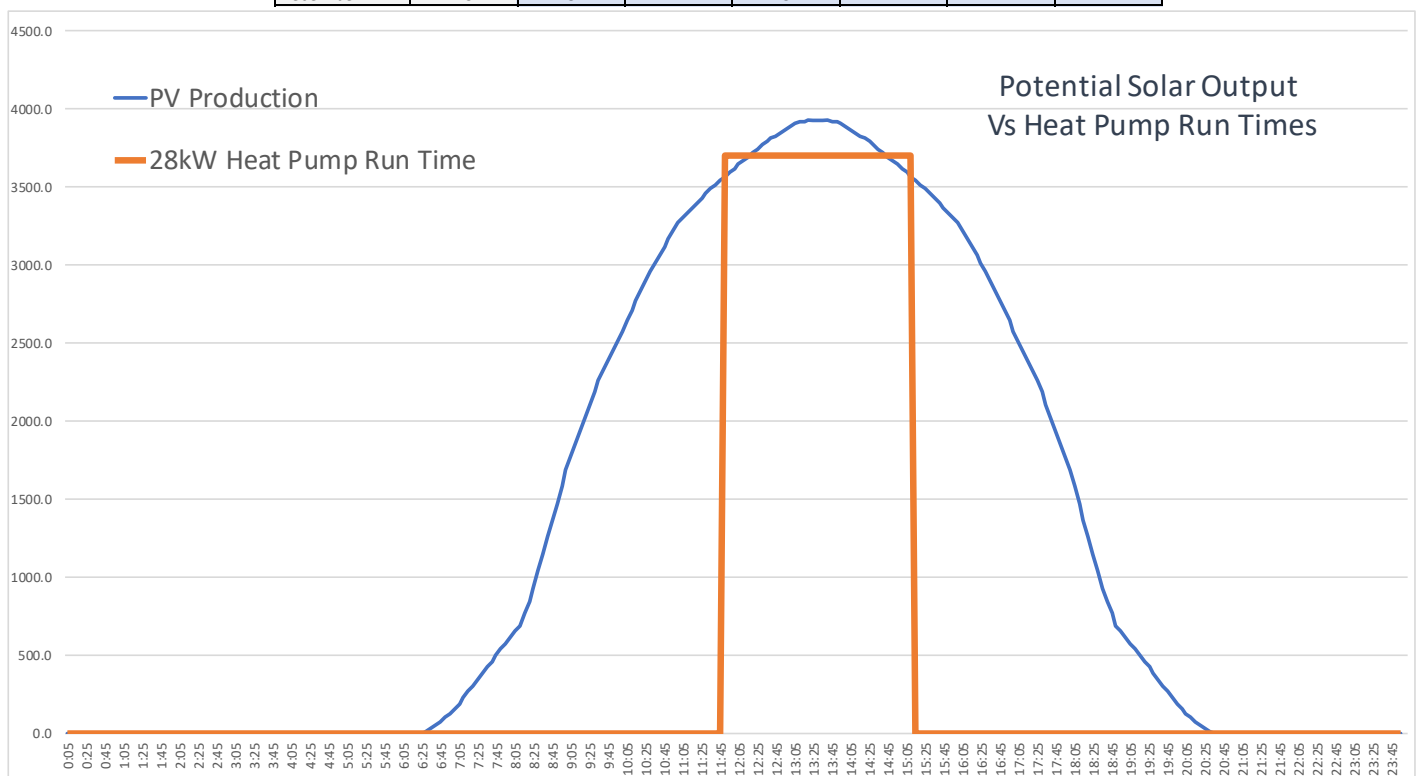
Solar kW size 5

Time on 11:45

Time off 15:14

		Madimack Elite Silent					
		11	13	17	21	28	35
January	38	4	3	3	2	2	1
February	40	4	4	3	2	2	1
March	50	5	5	4	3	2	2
April	76	9	7	6	5	3	3
May	101	13	11	8	7	5	4
June	115	16	14	11	9	6	5
July	123	18	15	12	10	7	6
August	116	16	14	11	9	6	5
September	89	11	10	7	6	4	4
October	70	9	7	6	5	3	3
November	54	6	5	4	3	2	2
December	43	5	4	3	2	2	1

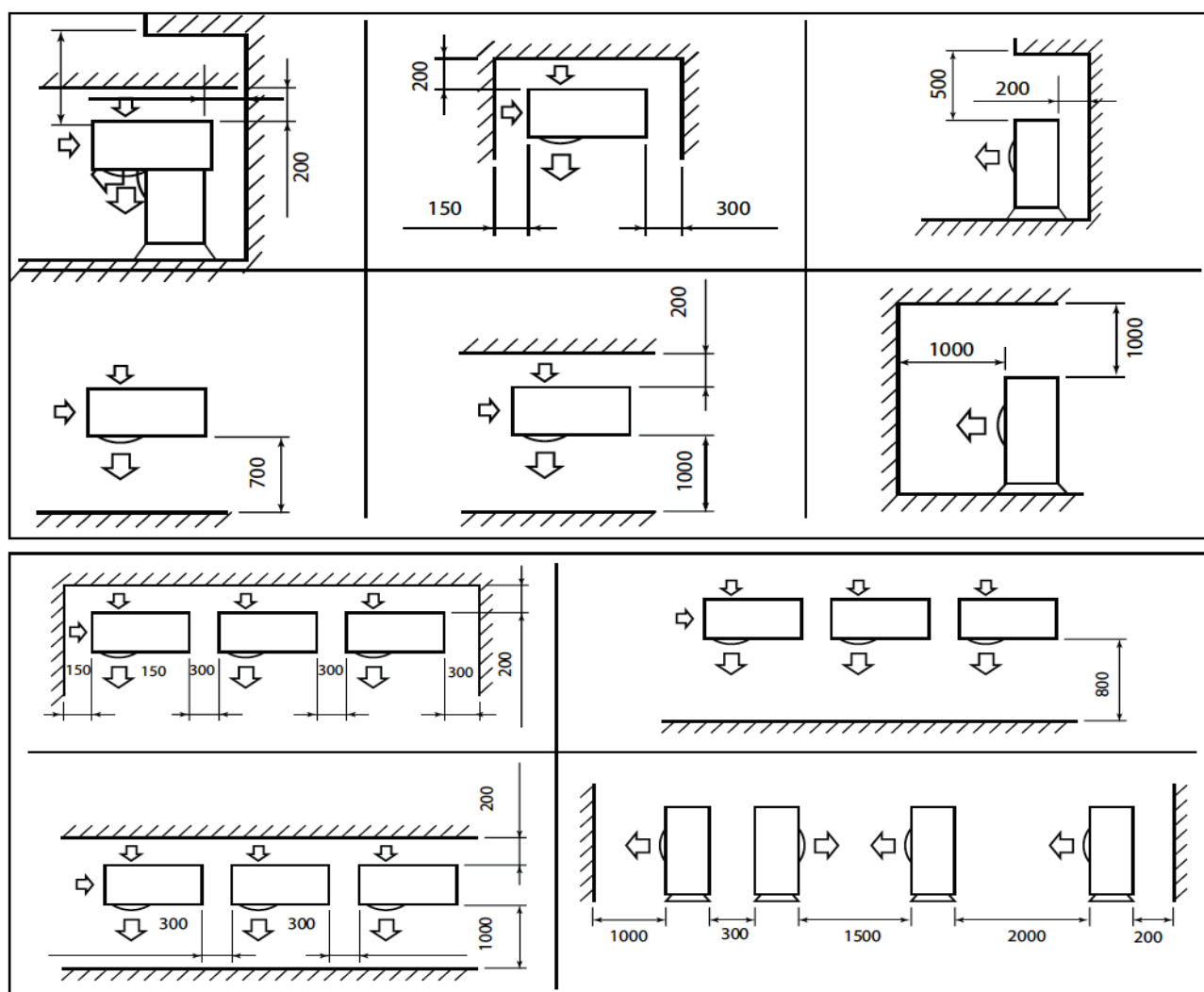
Potential percentage under curve 0.00%



Ventilation requirements for heat pump position

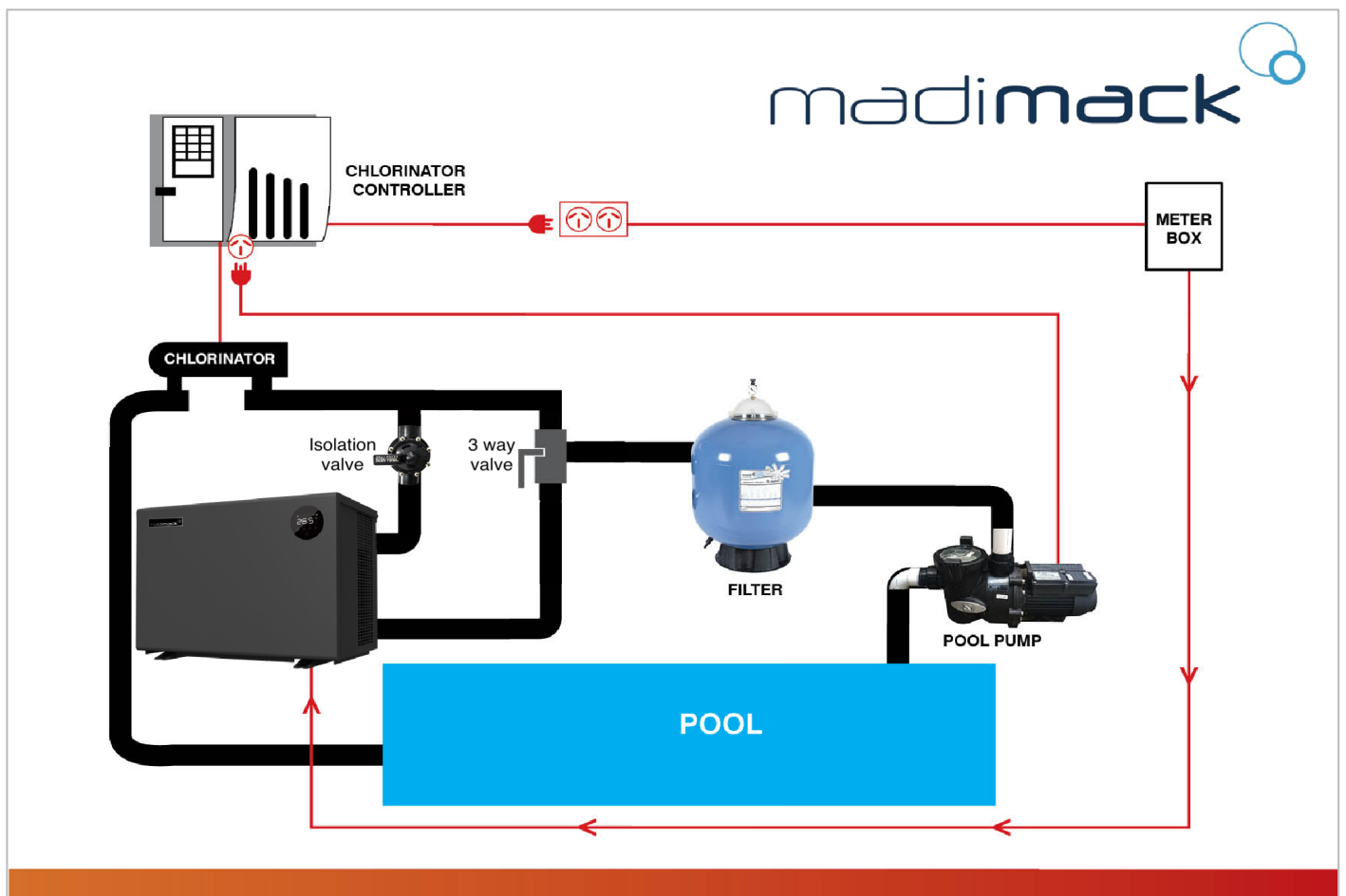
A heat pump should be placed in a well ventilated, preferably outdoor location. The below images are recommended distances from walls or other objects for the Summer Eco heat pump. All installation information can be found on our website in the downloads section.

If you have any specific questions regarding the positioning of your heater please speak to your installer or contact Madimack technical direct on 1300 899 737 and we can



Example plumbing diagram

There are a many different ways of plumbing a heat pump and a plumber will be able to give you a site specific answer on your requirements.
See the below example on plumbing a heat pump by utilising the existing filtration pump

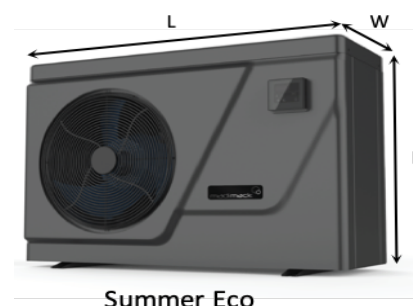


Heat Pump Dimensions

Below are the dimensions for our range of heat pumps. The units are designed to be outside and are fully weather proof. For recommendations for locations and how they look next to your pool, down the side of a house or mounted at high level please see our website for recent projects and photos of installations provided by our national installer network.

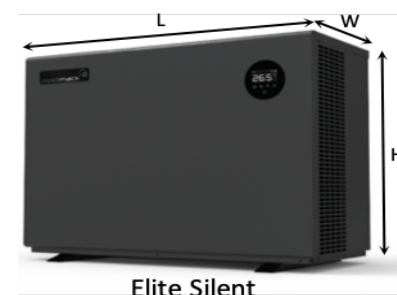
Summer Eco

	SUME90	SUME130	SUME160	SUME200	SUME240
L	872	872	962	962	961
W	349	349	349	349	420
H	654	654	654	754	758



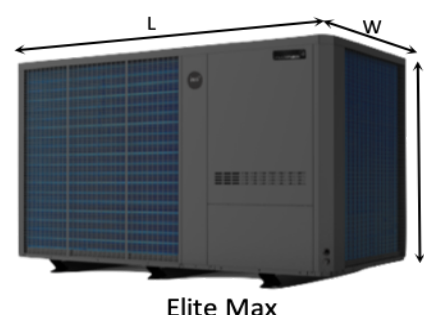
Elite Silent

	ES110	ES130	ES170	ES210	ES280	ES350S
L	890	890	1060	1060	1060	1314
W	440	440	440	440	440	512
H	658	658	658	958	958	958



Elite Max

	EM60	EM110
L	1000	2100
W	1110	1090
H	1260	1280



*All dimensions are in mm

To view the full list latest specifications and dimensions
please click the link below

www.madimack.com.au/brochures



Disclaimer: This evaluation had been made at the highest technical level from natioanally available data and calculations. Though great care has been taken it should still be seen as indicative and not a direct representation.



ISO9001

ROHS



CB

CE



■ EMCcertified
■ Production accredited

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