



Fountains Redefined

“Today, many fountains are still built using conventional method with massive plumbing works, big centrifugal pumps that consume high energy. At Avant-Garde, we think creatively and we do it differently. - Dr. Peter Kohl, Founder of Avant-Garde de Studio

ECOcient™ Classic 24VDC Pump

Safety is the primary consideration for using 24VDC pumps in any interactive fountain installation.

Interactive fountains are significantly different from decorative fountains because people interact with water and play in the water. There are also guidelines or regulations that fountain equipments

have to be low voltage for safety reasons.

Leader in the DMX Variable Speed technology, Avant-Garde is thrilled to announce the re-launch of our best selling ECOcient™ pump series with new added features and improvements. Our exciting new series of ECOcient™ Classic pumps offer more power, higher performance and far better efficiency than the predecessor.

Avant-Garde has specially designed a VS-Smart™ processor built into the pump to allow faster bilateral communication and increase water flow and pressure performance required by any sequenced fountain programming.

This new Variable Speed pump will help making any fountain easier and at the same time, offers great potential for savings.





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ECOcient™ Classic 24VDC

Today, there are many different kinds of pumps to meet different applications. Avant-Garde's special Brushless DC (BLDC) pump is designed for safe, reliable and energy efficient use in interactive fountain applications required by the rules and regulations.

Our revolutionary low voltage 24VDC Variable Speed DMX Controllable ECOcient™ Classic pumps are designed to offer you the following features and benefits:

- Safe and reliable 24VDC BLDC technology
- Ease of setting up the fountain
- Exciting and unlimited variation of choreography to your fountain
- Reduce initial investment on the complex plumbing work
- Fewer pipes will reduce the penetrations and minimize risk of water leakage
- Requires shallower pool which result in lower floor loading and less expensive to build
- Uses less water as a result of shallower pools means reduce filtration
- Eliminate the use of high maintenance solenoid valves or water switches



- Free up expensive Gross Floor Area (GFA) in commercial development for better usage
- Pay less on your electricity bills
- Fresh and seawater application
- Dry and submersible application

Our ECOcient™ Classic pumps are made of high quality durable plastic with ceramic shaft that made them suitable for both fresh

and seawater application. All pumps are IP68 protection rated with dry run, over-temperature and over-current protection.

CE RoHS





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ECOefficient™ Classic 24VDC

Product Specification

Dimension

112mm (W) x 245mm (L) x 140mm (H)

Power

50W - 300W

Voltage

24VDC

Max. Flow Rate

7,200l/hour - 14,400l/hour

Max. Head

3.5m - 11.0m

Protection

IP68

Control Protocol

DMX512

No. of Channels

2 (Standby, Speed)

Length of Cables

24V Cable (2core) - 3m

DMX In Cable - 1.5m

DMX Out Cable - 1.5m

Material

Heavy Duty Plastic Pump

Body, Ceramic Shaft

Water Temperature

5-35°C

Accessories

40150 - ChoreoMaster™

Easi-DMX Addressing Kit

20186 - ClearStream Jet

CS10/40

20187 - ClearStream Jet

CS12/40

20188 - ClearStream Jet

CS14/40

20189 - ClearStream Jet

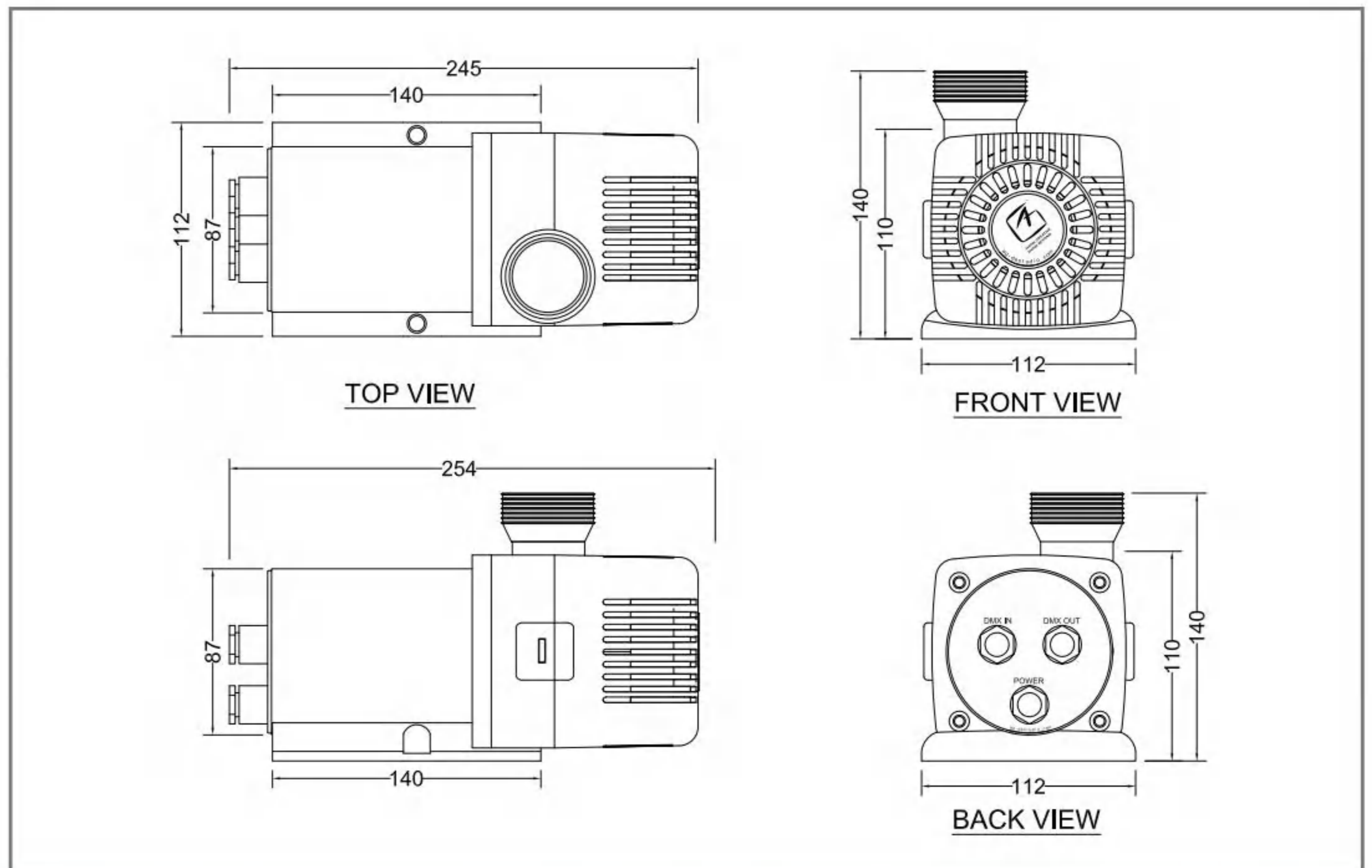
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31121 - LumiFONS™ Classic

145PH/18W

31122 - LumiFONS™ Classic

145PH-D/18W



Pump Model	Power (W)	Flow (l/m)	Head (m)	Art. No.
ECOefficient™ Classic 50	50W	120	3.5	12120
ECOefficient™ Classic 100	100W	155	5	12121
ECOefficient™ Classic 150	150W	180	6.5	12122
ECOefficient™ Classic 200	200W	195	8	12123
ECOefficient™ Classic 250	250W	220	9.5	12124
ECOefficient™ Classic 300	300W	240	11	12125



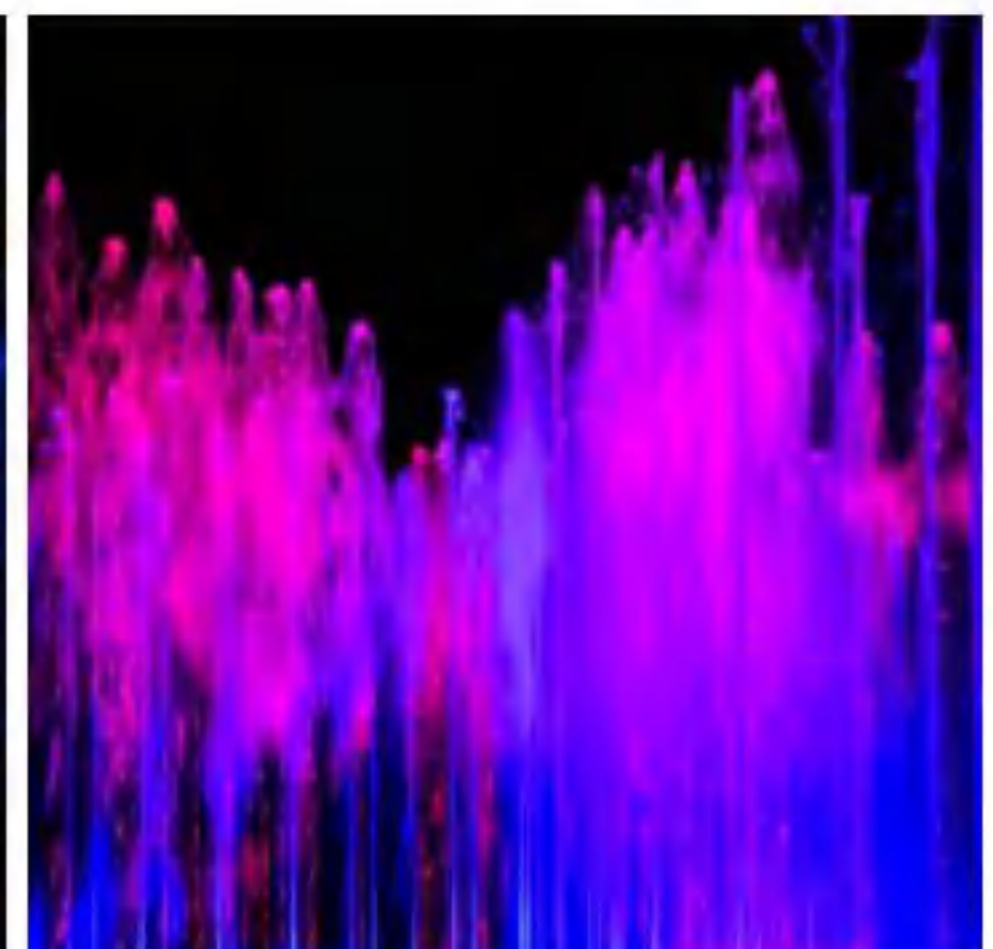
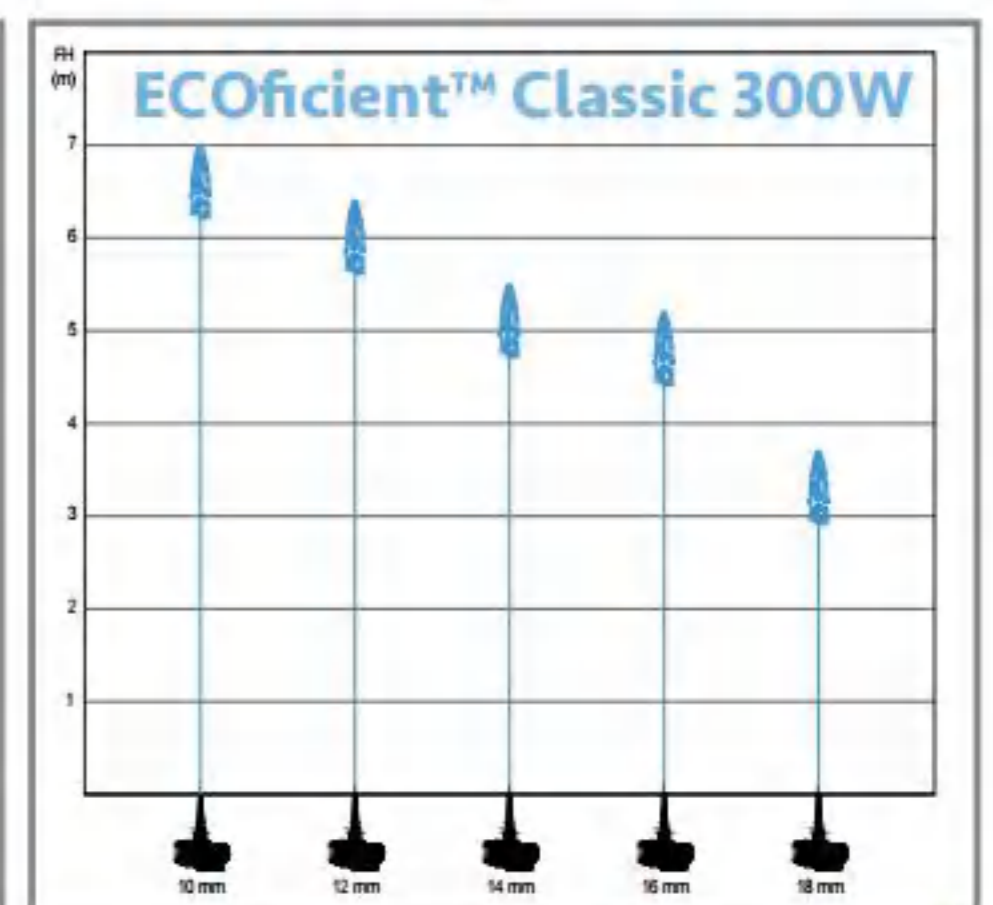
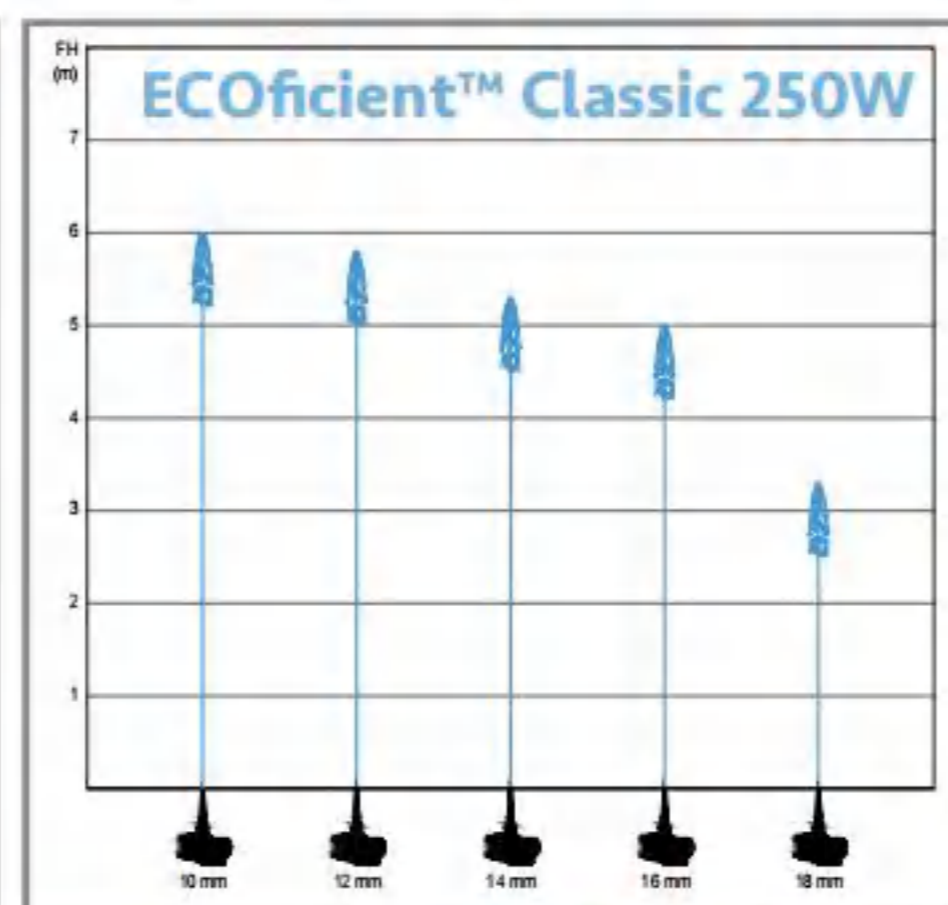
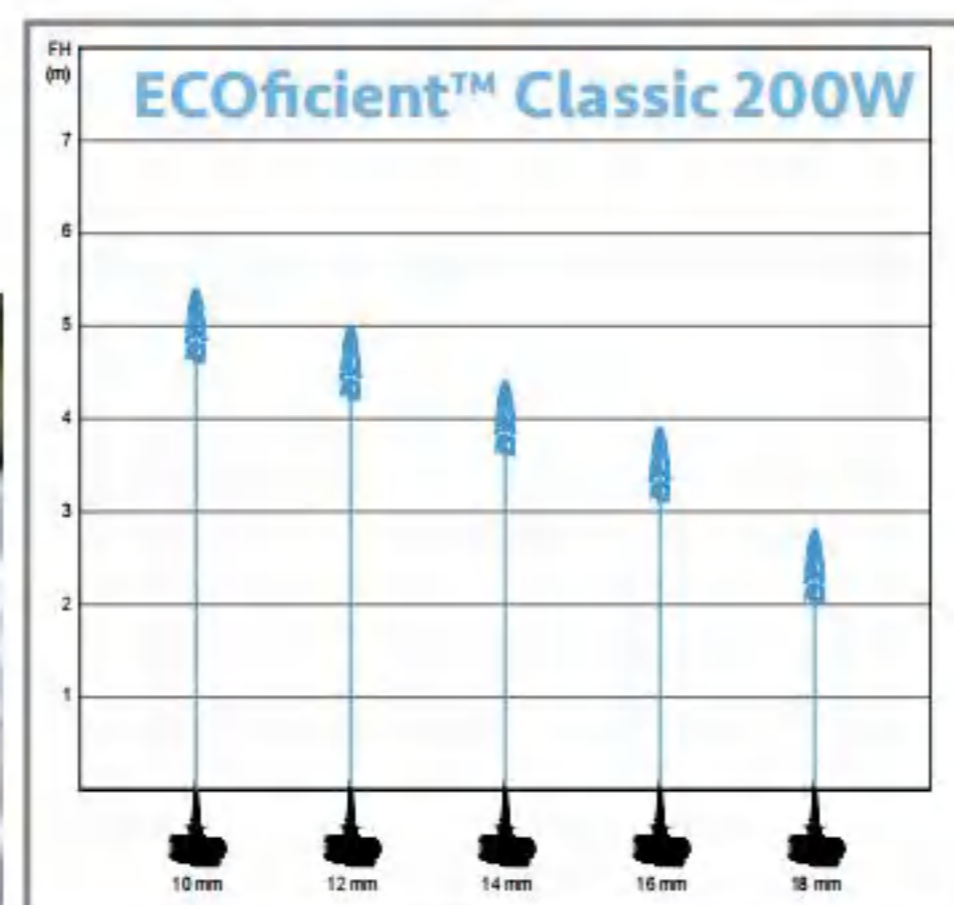
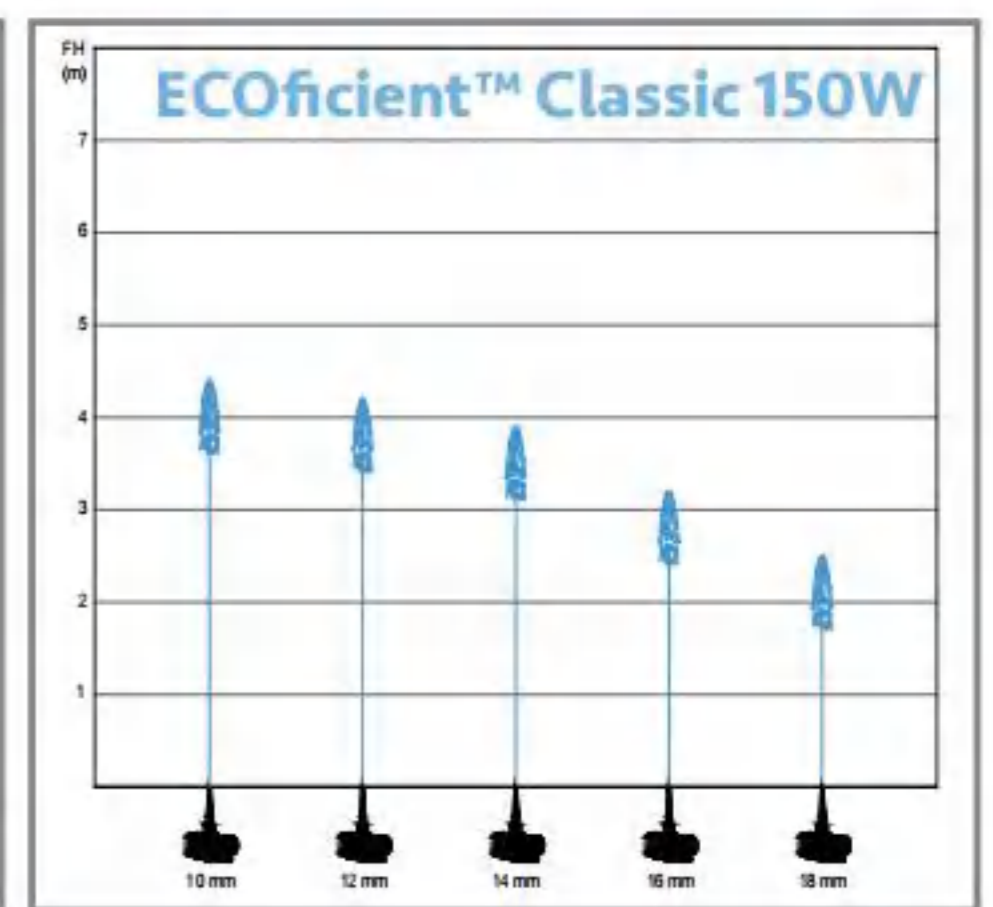
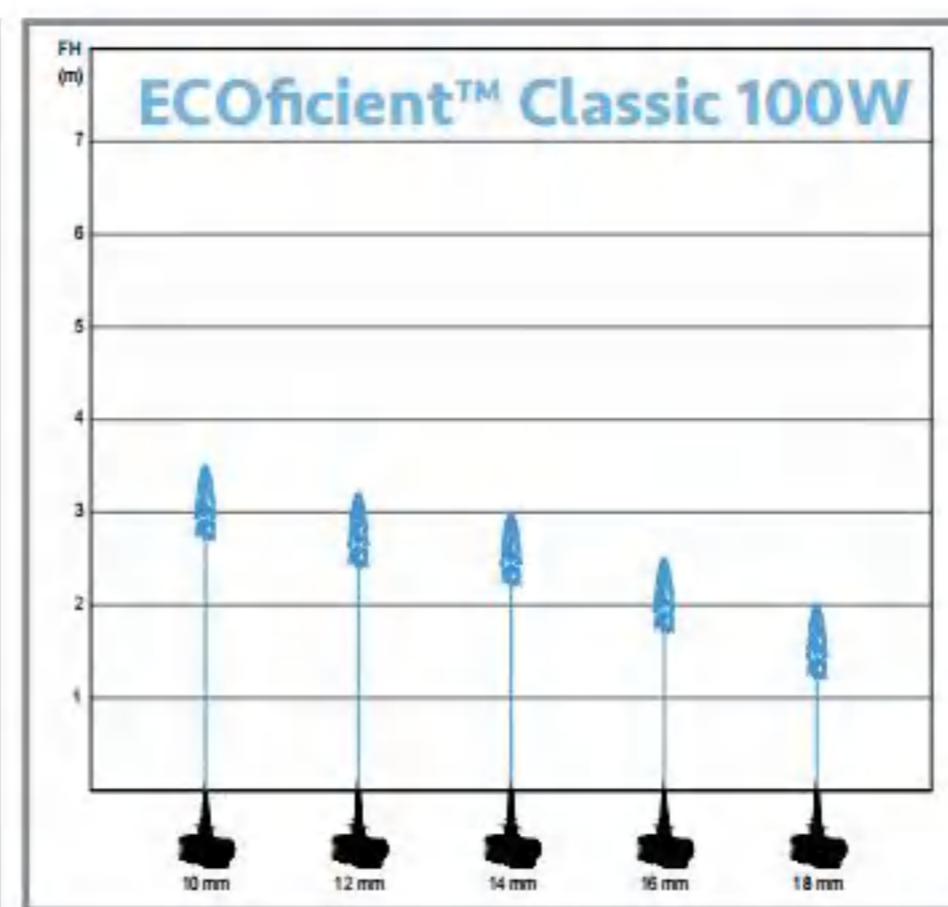
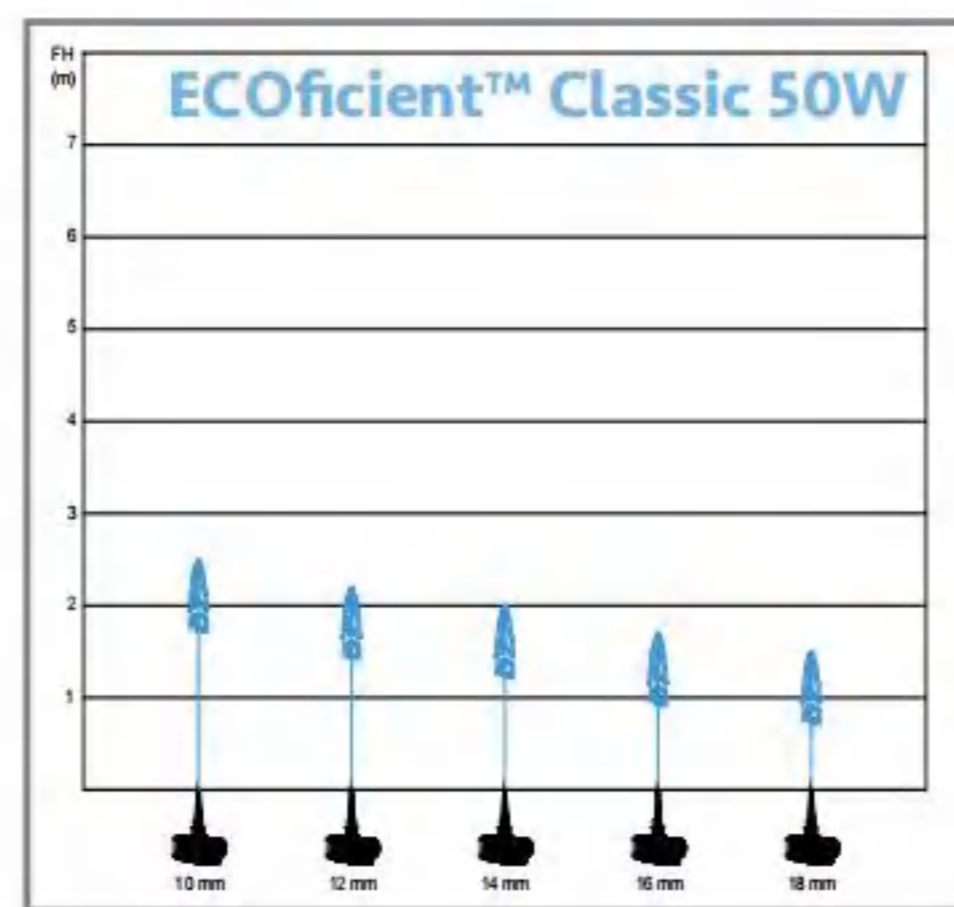
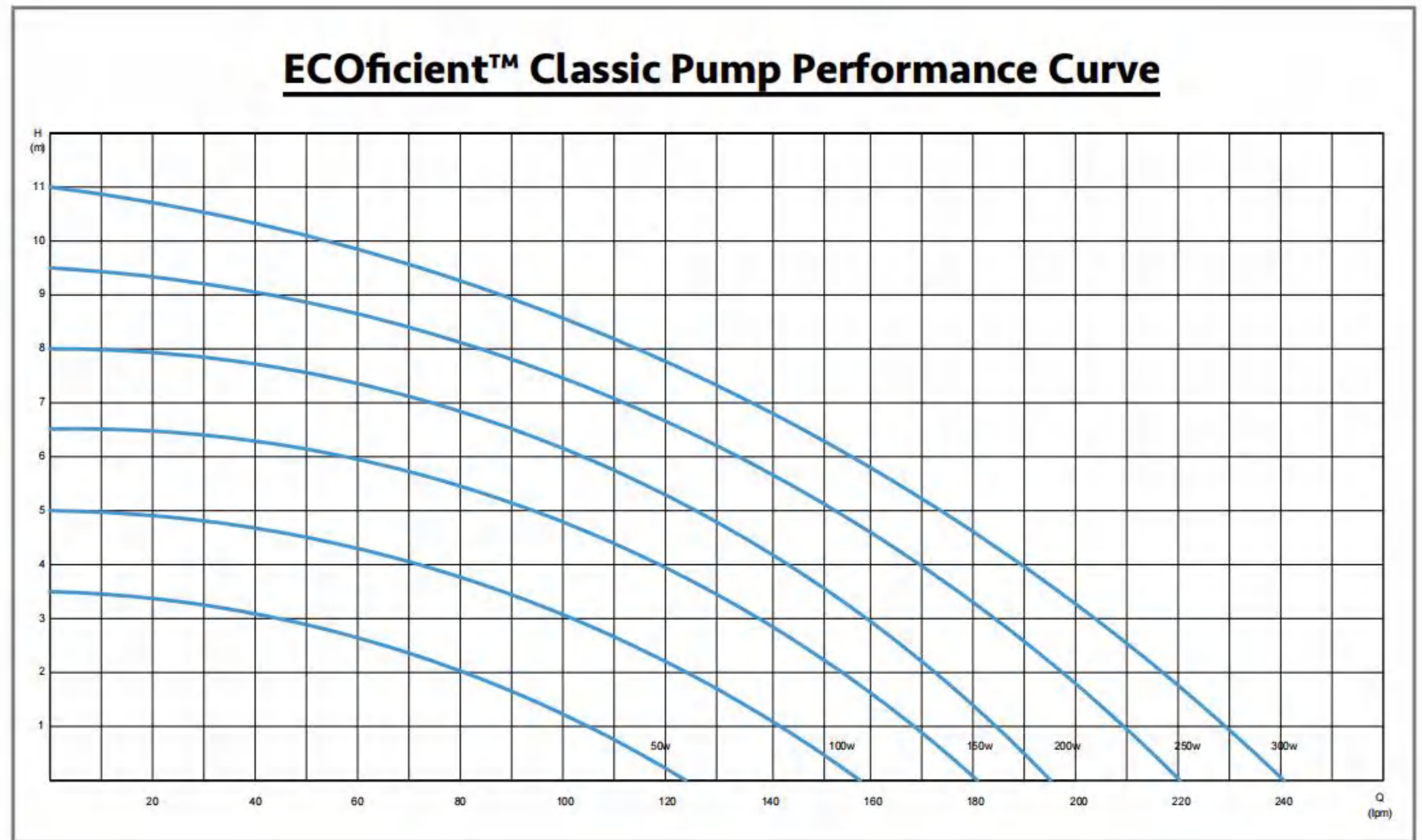
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ECOefficient™ Classic 24VDC

Selecting the right pump is the first important step to achieve the desired fountain height. Different nozzles have different flow and pressure requirement. Be sure to choose the right pump.

Determine the fountain height you want to achieve and then refer to the data sheet of the nozzle and obtain the corresponding flow and pressure (head) requirement of that nozzle. Take into consideration any possible frictional losses from the pipes and fittings in between pump and nozzle.

In dry fountain design, it is important to consider the height from water level to the floor deck level and this difference in height should be added to the overall fountain height.



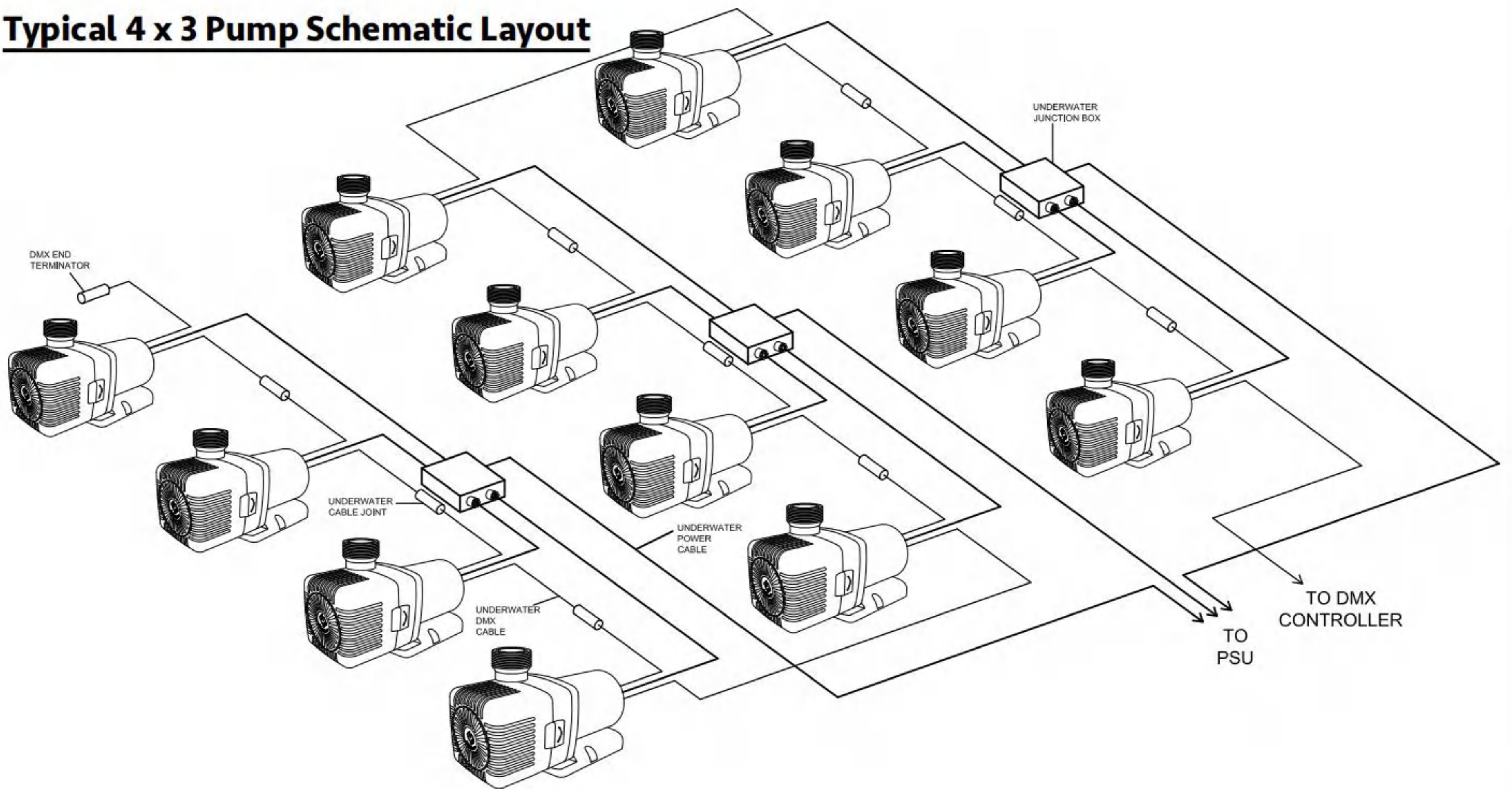


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ECOefficient™ Classic 24VDC



Typical 4 x 3 Pump Schematic Layout





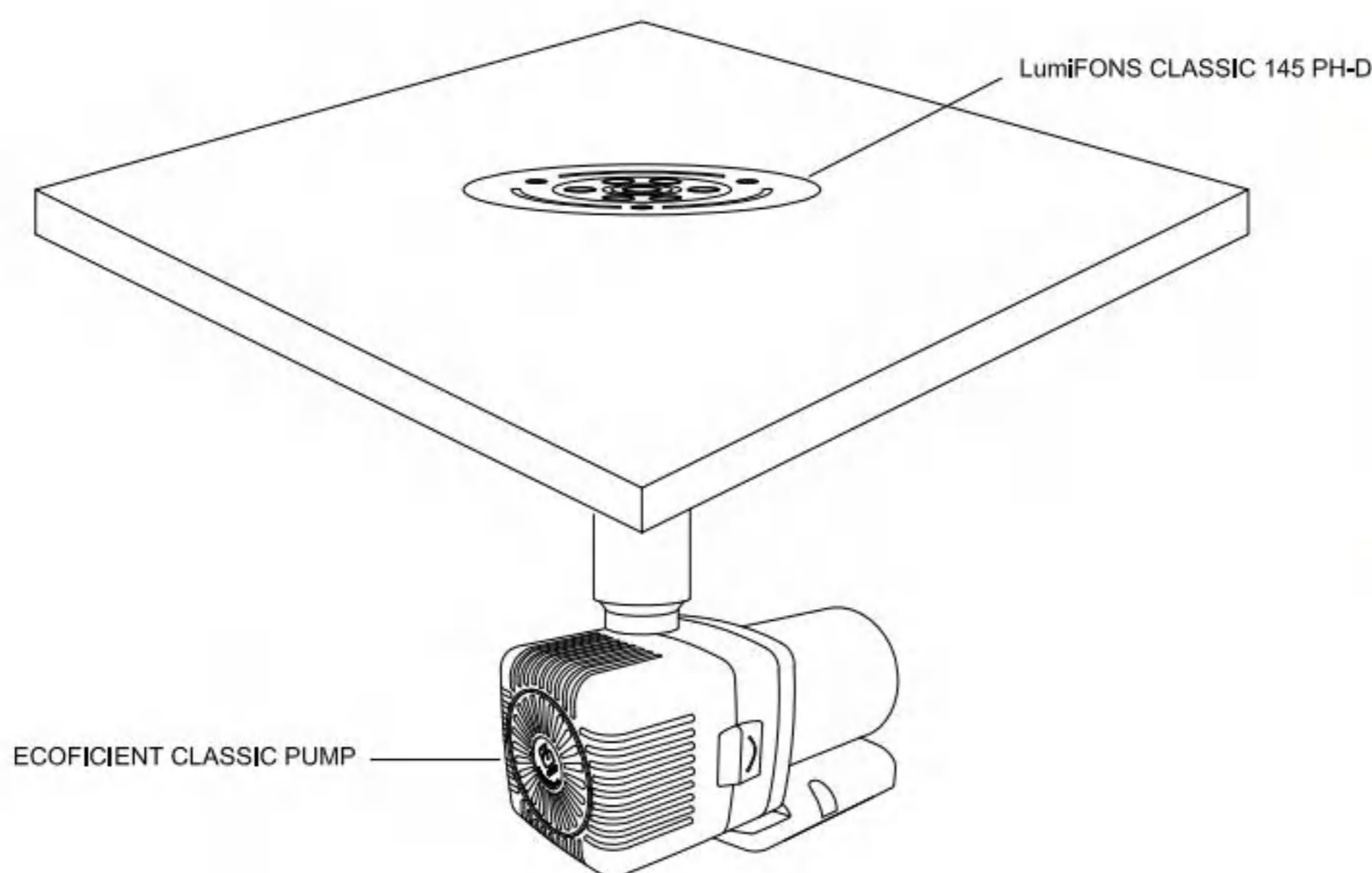
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ECOefficient™ Classic 24VDC



Splash Pad Application

“Splash Pad” or “Dry Fountain ” refers to a wading pool containing spray features intended for recreational use, that does not allow water to retain in the basin. “Interactive Fountain” means a wading pool designed for aesthetic appreciation, expressly designated or used with the knowledge and consent of the owner or operator for wading or recreational bathing by any segment of the public. Interactive fountains are a type of wading pool. Filtration system should be designed to meet local public health requirement.



TYPICAL SPLASH PAD INSTALLATION



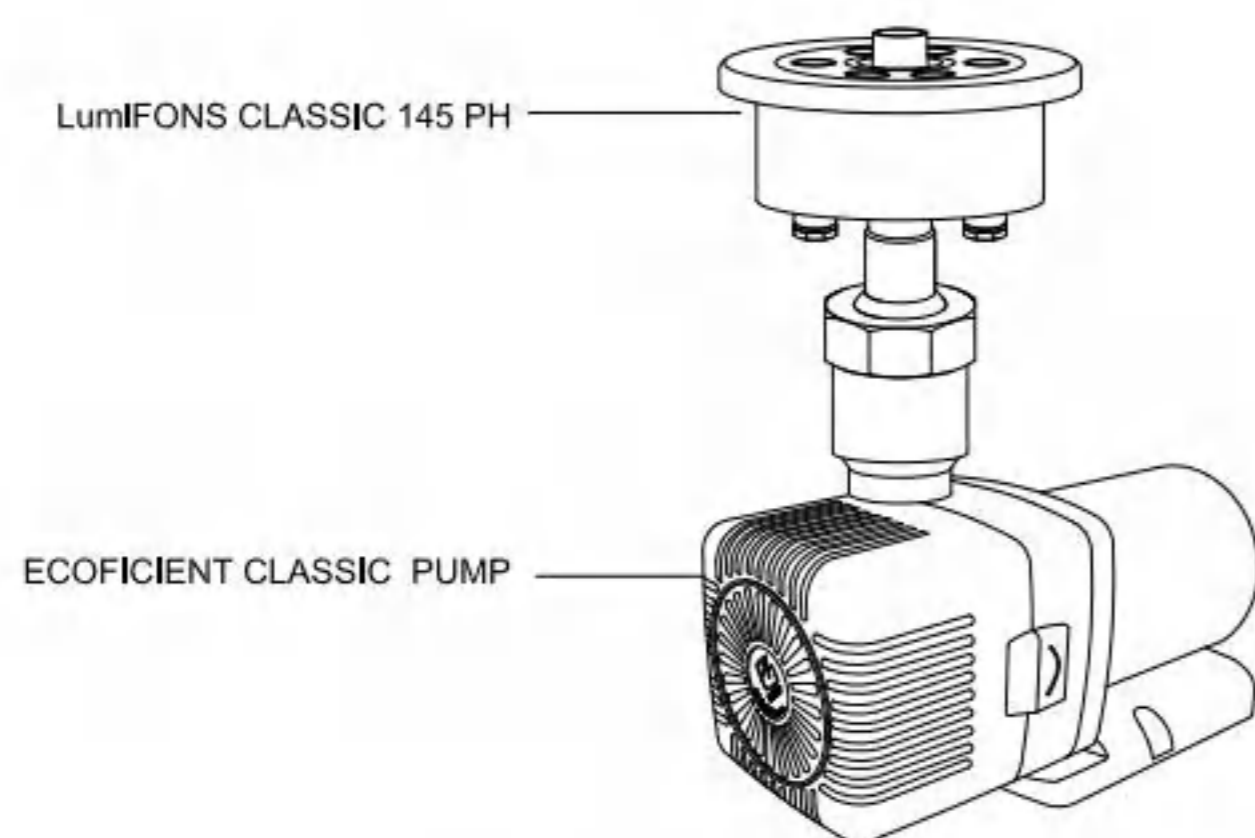
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ECOefficient™ Classic 24VDC



In-Pool Application

It is always recommended that all fountain pool with possible access to public should consider using low voltage fountain equipment such as 24VDC pumps and lights. The depth of the water should be kept as shallow as possible. All pumps should be securely fasten to the pool floor to prevent movement. The pump should be fully submerged underwater in wet application to prevent sucking air or running dry and it is advisable to keep the strainer in place to prevent debris from getting into the impeller. Filtration system should be designed to meet local public health requirement.



TYPICAL POOL INSTALLATION



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ECOefficient™ Classic 24VDC



“The greatest ideas are the simplest.” - William Golding

At Avant-Garde, we are constantly challenging ourselves to find the simplest and fastest way to build a fountain without compromising on the quality and functionality.

We look at modularity in design for a solution and the approach is to subdivide a system into smaller parts called modules that can be independently created and then used in different systems. A modular system can be characterised by functional partitioning into discrete scalable, reusable modules, rigorous use of well-defined modular interfaces, and making use of industry standards for interfaces. Besides reduction in cost due to less customisation, and flexibility in design, modularity offers other benefits such as augmentation (adding new solution by merely plugging in a new module), and exclusion.

Thanks to our compact variable speed DMX controlled 24VDC pumps, we are able to apply the same modular design concept in fountain to create innovative systems where they are assembled easily at site and can be configured into a variety of arrangements.

At Avant-Garde, we are not trying to do different things. We just try to think creatively and we do the things differently.



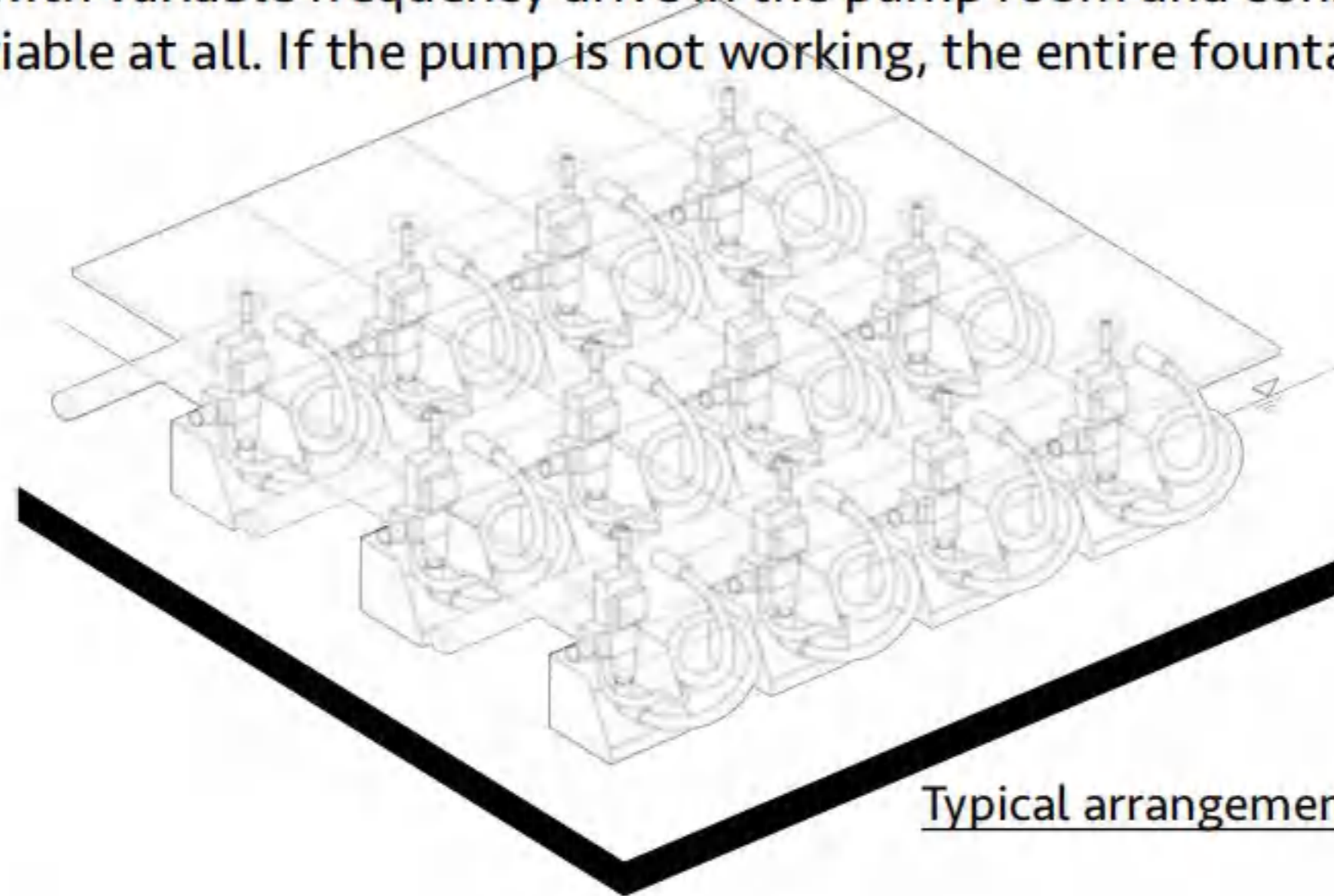
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ECOefficient™ Classic 24VDC

Conventional System

Up till now, most companies are still adopting the conventional way to construct fountains with the use of big centrifugal pumps located in underground plant rooms feeding water to the fountain via massive piping system. There are also a lot of electrical cables from underwater luminaire and water switches or solenoid valves all going back to the underground plant room through conduits. Many conduits and water pipe penetrations would pose a challenge to the waterproofing of the pool structure.

The sequencing of the fountain is via controlling water switches or solenoid valves and typically the pumps have to run at full power while the switches control the on and off of each individual fountain nozzle. Variable frequency drives can be incorporated to adjust the fountain heights as a collective group but not individual fountain nozzle, which will limit the choreography possibilities. In order to make every nozzle truly individual control with changing fountain height, this would mean adding one dry pump with variable frequency drive in the pump room and connecting by pipes to each nozzle. This would be economically not viable at all. If the pump is not working, the entire fountain will not be working too.

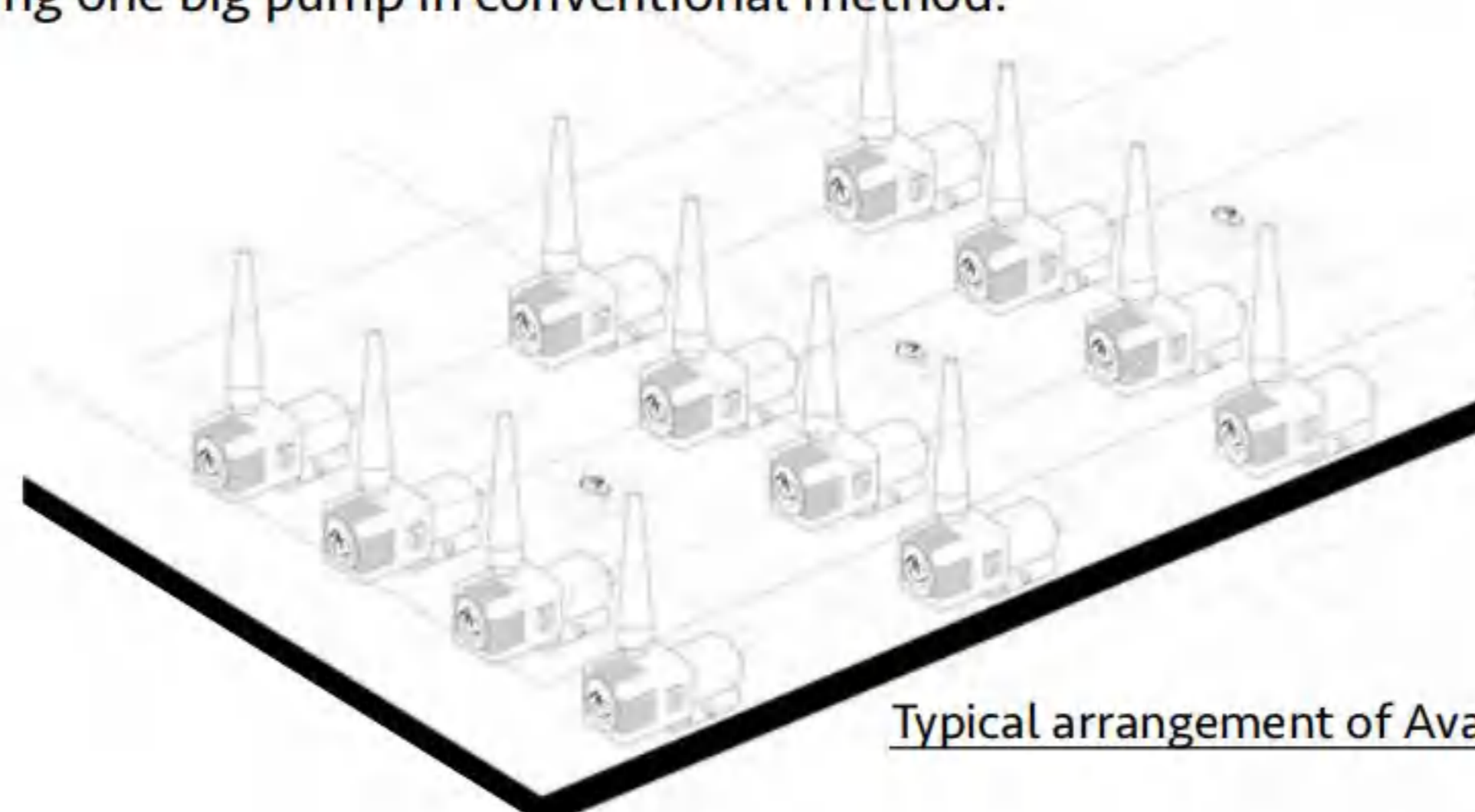


Typical arrangement of Conventional Water Switch's System

Avant-Garde's System

At Avant-Garde, we are not trying to do different things. We just try to think creatively and we do the things differently. With the variable speed pumps like the ECOefficient™ Classic series, each nozzle will be equipped with individual pump. Each ECOefficient™ Classic pump is individually controlled by varying the speed of the pump to adjust the desired fountain height. Variations of sequences and water patterns are achieved through the control of individual pump. In case if one pump is not working, the entire fountain is still operating. Only the pump that is not working need to be sent for repair or replacement. This is clearly a big advantage.

Constructing a big fountain with this system will save lots of time and money. As there is no need for massive pipe works and the pumps are located inside the pool, saving time and money on time-consuming project coordinations, laying long and massive pipes and; the space for a big pump room will drastically reduce initial investment. There will also be substantial savings on the electrical consumptions because each ECOefficient™ Classic pump is activated according to the sequence and height programmed, otherwise the pump will be in a standby mode, saving of up to 40% or more on electricity as compare to using one big pump in conventional method.



Typical arrangement of Avant-Garde's System



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ECOefficient™ Classic 24VDC

Items	Conventional System	Avant-Garde's ECOefficient™ Classic System
Pipe Works	Massive piping works with lots of fittings involved	Pipe works are not required
Pumps	One big centrifugal pump will be supplying water to the nozzles and if that pump is down, the entire water feature will be down. In this type of system, it is usual to include standby pump which means higher initial capital investment	Each ECOefficient™ Classic pump is individually controlled. Changing the individual flow by varying the speed of pump to adjust fountain height creates dynamic effect with unlimited variation of water patterns and visual effects. If one pump is down, the entire fountain is still operating. Only the pump that is not working need to be sent for repair or replacement
Electrical	The pump needs initial provision to start up the pump which is generally 3-4 times the operating power of the pump. The pump is constantly switched on at full power when using the solenoid valves or water switches. There is no electricity saving because it is running at 100% even if the sequence programs the solenoid valves or water switches to be off	The ECOefficient™ Classic pumps do not require high power to switch it on. The power consumption is lower as each pump is activated according to the sequence and height programmed, otherwise they are in a standby mode, saving of up to 40% or more on electricity as compare to using 1 big pump
Frictional Losses	Massive frictional losses due to more pipes and fittings being used. Pipes sizes are bigger and pump needs higher head to compensate the frictional losses	Minimum frictional losses as hardly any pipes are used since the nozzle is connected directly to the ECOefficient™ Classic pump outlet
Nozzles/Water Effect	Solenoid valve or water switch is only an on/off device to activate the water effect and this means the fountain nozzles are not individually controlled. The height of all nozzles are switched on/off at the same height and time and this gives a limited range of movement and visual effects. Variable frequency drive has to be added but changing fountain heights is in group and not individual nozzle	Each nozzle is individually controlled and each nozzle can be pre-set to different heights. With DMX, the height of each fountain nozzle can have 255 steps which means the fountain will have almost unlimited sequencing possibilities. Combined with the individual lights will create even more variety and patterns to achieve a vivid, vibrant and fascinating show
Pool	Typically pool depth is between 700-1000mm. Deep pool means higher structural load and therefore it is more expensive to construct.	The minimum pool depth is less than 300mm which means it is cheaper to construct. If the pool is an open fountain pool, it would also means safer for the general public
Filtration Room	Deeper pool would result in bigger filtration system to clean the water. This would means more investment cost in both equipment and space	The shallow pool requirement would result in less water to be filtered. This will greatly reduced the investment for filtration equipment and will reduce the space requirement and power consumption in operating the fountain
Pump Room	Big pump room is required. Overall construction will be increased and valuable Gross Floor Area (GFA) has be used for pump room and not for other revenue generating purposes. With big pump room space, power consumption increase because of lighting and ventilation	There is no requirement for a pump room, saving in construction cost and free up expensive Gross Floor Area (GFA) for other usage
Control Room	Required	Require a small room because the control panel is relatively smaller
Balancing Tank	Required	Not Required
Controller	Additional devices have to be added to control the water switches and solenoid valves by DMX512 controller	Using DMX512 controller and programming is easy

DESHB

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