



# Benefits of Variable-Speed Pumps

Effective July 19, 2021, new U.S. Department of Energy (DOE) regulations will go into effect that require Dedicated Purpose Pool Pumps (DP3) manufactured in or imported into the U.S. meet minimum energy-efficiency standards. These regulations will eliminate most single-speed and two-speed pumps from the market and create a shift to variable-speed pumps.

While single-speed pumps are popular, variable-speed pumps offer a number of benefits that other pumps simply cannot offer.

## 1. Energy and Cost Savings

Variable-speed pumps help maximize energy efficiency and result in huge cost savings. Operating a variable-speed pump at 50% of its maximum speed uses 85-90% less energy and reduces energy bills greatly. It is an investment that will often pay for itself in less than one year. These savings can be attributed to the Affinity Law. Please see the chart below for further explanation.

## 2. Sound Reduction

Variable-speed pumps are much quieter than traditional, single-speed pumps. Sound from a pump is generated by both the motor and hydraulics. Reduce the speed of the motor and you also reduce the sound level.

## 3. Better Filtration

Water passing through a filter at a lower speed is filtered more effectively than water passing through at a higher speed. The lower speed allows the filter to catch more debris, resulting in cleaner pool water.

## 4. Longer Equipment Life

Variable-speed pumps operating at lower speeds generate less head pressure. This decreases stress on not only the pump but the rest of the system as well, resulting in less maintenance and longer equipment lifetime.

## 5. Consistent Chlorine Levels

UV rays from the sun can destroy chlorine in pools. Variable-speed pumps with saltwater chlorinators typically run on a longer filtration cycle which maintains proper chlorine levels. The result is a properly sanitized pool.

## 6. Versatility

Variable-speed pumps offer more versatility for water features. Different speeds can create different effects, allowing the homeowner to customize their perfect pool experience.

## 7. Safety

Variable-speed pumps offer additional safety. Lower operational speeds result in lower water velocity which greatly reduces water entrapment risks.

For more information on the upcoming Department of Energy regulations, visit [Jandy.com/en/doe](http://Jandy.com/en/doe).

## Pump Affinity Law Explained

Pump Affinity Law shows the impact that pump speed has on flow rate, system resistance and energy requirements. Pump speed affects each variable differently.

An easy point of comparison is operating a pump at full-speed vs. half-speed.

	Full Speed	Half Speed	Reduction
Pump Speed (RPM)	3450	1725	1/2
Flow Rate (GPM)	90	45	1/2
System Resistance (TDH)	40	10	1/4
Operating Costs (\$/hr)	\$0.16	\$0.02	1/8

Reducing pump speed by 1/2 results in:

- Flow rate (GPM) being reduced to 1/2 of the original value
- System resistance (TDH) is reduced to 1/4
- Energy required (\$/hr) to operate the pump is reduced to 1/8