HYDROSTORM
GEN2 ECO-VS 100

Operating Guide
操作指引



Australasia - Asia
www.waterco.com

WATERCO
water, the liquid of life

www.waterco.com

⚠WARNING This equipment must be installed and serviced by a qualified technician. Improper installation may result in property damage, serious injury or death. Improper installation and/or operation will void the warranty.

⚠ 警告 该设备须由合资格的技术人员安装和维护，不恰当的安装会导致缸体性能受损，严重损坏或无法使用。不恰当的安装/操作方式会使保修无效。



Notice to Installer - This manual contains important information about the installation, operation and safe use of this product. Once the product has been installed **this manual must be given to the owner/operator of this equipment.**

安装人员注意 — 此说明书包括产品安装，运行和安全使用的重要信息。一旦产品被安装，该说明书必须交到用户或操作者的手中。

Hydrostorm GEN2 ECO-VS 100 Variable Speed Pump Operating Guide

Hydrostorm GEN2 ECO-VS 100 is equipped with the very latest variable 3 speed permanent magnet brushless DC motor; Hydrostorm GEN2 ECO-VS 100 is capable of lowering its energy usage & reducing its operating noise levels.

Energy Saving

A pool filtration system does not need to run at the maximum water flow rate of the pump. In fact, the efficiency of your pool's filtration and chlorination improves at lower flow rates. Since the filtration cycle accounts for 99% of the pump's running time, you can operate the Hydrostorm GEN2 ECO-VS 100 primarily on its low (ECO) speed setting. This can lead to potential energy savings of up to 80%.

Hydrostrom GEN2 ECO-VS 100's Variable 3 speed options

Hydrostorm GEN2 ECO-VS 100 has 3 factory-set speed options: ECO (Low), MED & HIGH, but with the additional advantage of fine adjustment in operating speed with 10 rpm increments, allowing fine tuning of the pump's motor speed to perfectly match the flow requirements of the swimming pool, maximising energy savings and minimising pump noise. The Hydrostorm GEN2 ECO-VS 100 operates most economically and with the lowest noise level using the ECO (Low) speed option. The Hydrostorm GEN2 ECO-VS 100 has a variable speed control, ranging from 1000 to 2850 rpm (revolutions per minute). The pump's rpm can be viewed on the control panel display.

ECO (Low 1900rpm): Filtration – 99% of the time,the most economical speed for the purpose of operating the pool's filtration system without any ancillary pool equipment attached to the re-circulation system. E.g. suction cleaners.

Medium (2400rpm): Automatic pool cleaners,this speed will enable the operation additional pool equipment for pool cleaning functions that require the use of suction cleaners and low pressure spa jets.

High (2850rpm): Vacuuming and backwash – 1% of the time, power speed selection for use with backwashing granular media filters (e.g. sand filters), manual pool vacuuming and operating pool equipment with high water pressure requirements. E.g. water features and spa jets.



Stop: This will cancel any variable adjustments made outside of the above three factory settings.

Power: This will be lit whenever the pump is operating.

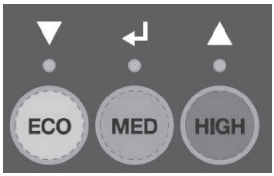
Error: If this is lit you will be required to contact your pool equipment supplier/store for maintenance advise.

Note: The ECO (Low) speed option is specifically designed to operate a standard pool filtration and recirculation system, but can be fine tuned with 10rpm increments to suit an individual pool's flow requirement.

Adjusting Low (ECO), MED and HIGH Speed Settings

1. While the Hydrostorm GEN2 ECO-VS 100 is operating press and hold the required speed setting button for 3 seconds or until the indicator light is flashing. This will allow the factory setting to be adjusted either down or up in rpm.
2. To decrease the speed of a factory speed setting select and press the speed button, the indicator light will begin to flash. Press the ECO with down arrow button, to decrease the rpm by increments of 10 each time you press the button, until you reach the desired operating rpm.

   Note: The pump motor has a minimum operating speed of 1000rpm.



3. To increase the speed of a factory speed setting select and press the speed button, this will then have the flashing indicator light. Press the HIGH with up arrow button as this will increase the rpm by increments of 10 each time you press until you reach the desired operating pump speed (rpm).

   Note: The pump motor has a maximum operating speed of 2850rpm.



4. You can have incremental or decremental by 100rpm by pressing the speed button for 3 seconds until the light begin to flash, then press the ECO with down arrow button or HIGH with up arrow button and hold on the button (do not release), the speed will increase or decrease by 100rpm until you release the button or until the maximum 2850rpm or minimum 1000rpm of the speed is achieved.



5. To save this variable speed adjustment, press MED button and the pump will apply this change.
6. Pressing the STOP button will cancel any variable adjustments made outside of the above three factory settings.



7. If no button is pressed for 30 seconds, the motor will automatically revert to the previous set operating settings.

Please ensure that the correct pump speed is selected in accordance with the pool equipment and adequately meets the pool's recirculation requirements.

Priming Function

Enable/Disable the Priming Function
You can toggle the priming function on or off. To do this, ensure the motor is in Standby State. Then, press and hold the MED and STOP buttons together for three (3) seconds. The screen will display "OFF," indicating that the priming function is off. After releasing the buttons, the priming state can be changed. The display will show "OFF" again, which means if the priming was enabled before, it is now disabled, and vice versa.

Customising the Priming Timer
You can set the priming timer while the motor is in Standby Mode. To do this, press and hold the ECO and STOP buttons together for three (3) seconds. The display will show the current priming time in minutes, which defaults to 3 minutes.

- Pressing the ECO button will decrease the timer by 10 minutes.
- Pressing the HIGH button will increase the timer by 10 minutes.
- The timer setting cannot exceed 240 minutes or go below 1 minute.

The default setting for the priming timer is 3 minutes. If you press the HIGH button once while at 3 minutes, the new setting will be 10 minutes. Similarly, if you press the ECO button once while at 3 minutes, the timer will change to 1 minute. The available priming timer settings are as follows: 1, 3, 10, 20, 30, and up to 240 minutes.

Customise Priming Speed
You can adjust the priming speed. To do this, with the motor in standby mode, press and hold the HIGH and STOP buttons together for three (3) seconds. The screen will display the priming speed in revolutions per minute (rpm), with the default set at 2850rpm.

- Pressing the ECO button will lower the speed setting by 100rpm.
- Pressing the HIGH button will increase the speed setting by 100rpm.
- The priming speed cannot exceed 2850rpm or go below 1000rpm.

The default speed setting is 2850rpm. If you press the ECO button once while at 2850rpm, the new priming speed will be set to 2800rpm. The available priming speed settings are as follows: 1000, 1100, 1200 and up to 2800 and 2850rpm.

Factory Default Setting

Factory default setting as below :

ECO	: 1900rpm
MED	: 2400rpm
HIGH	: 2850rpm
Priming ENABLE	: Enabled

To reset to Factory Default Setting, press STOP button to return to STANDBY Mode, then press and hold ECO + MED + HIGH buttons simultaneously for 3 seconds, all three speed LED lit up. Release the buttons as the motor has returns to factory default setting and the LED turn off

Flow Check Valve and Run Dry Protection

An optional flow check valve connects through the 2-pin socket on the side of the aluminium housing. The bypass switch must match the installation.

Bypass switch	Function
ON / left	Flow check valve bypassed
OFF / right	Flow check valve connected and active

Run-dry protection is activated in RUN and Speed Adjust modes. There is a 3-minute delay after the motor starts. If there is no water flow for 3 seconds, the motor will stop and trigger a Run Dry alarm.

Remote Control: RS-485 / Modbus

Connect a compatible 4-pin RS-485 cable to the RS-485 socket on the side of the aluminium pump control box housing.

When remote communication is established, the motor enters Remote state and keypad buttons are inactive.

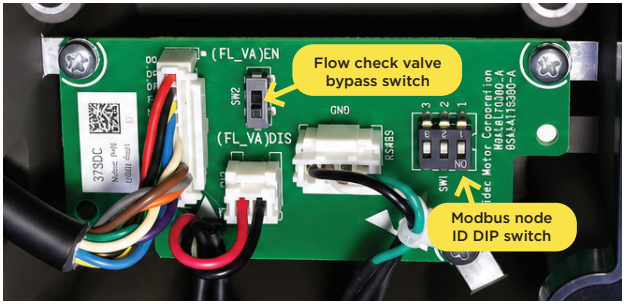
The motor follows commands from the external controller.

If communication is lost, the motor leaves Remote state and the keypad becomes active again after a delay of at least 10 seconds.

Do not adjust the product's DIP switches in the field (refer below images).



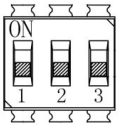
RS485 & Flow Check Valve Connector



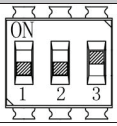
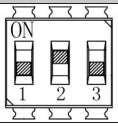
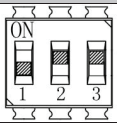
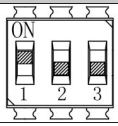
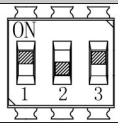
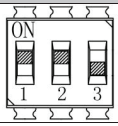
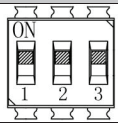
Flow Check Valve Bypass Switch

Wiring a Remote Connection

You can attach RS485-compatible cable to the RS485 socket on the side of Aluminum pump control box housing for connecting an external controller (see the picture in previous page). Dip Switches should not be adjusted in the field. Node ID is set as 240 if the DIP switch is,

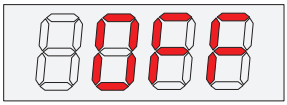
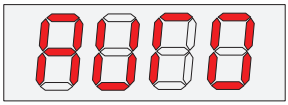


otherwise:

Node 1	Node 2	Node 3	Node 4	Node 5	Node 6	Node 7
						

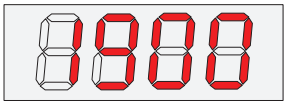
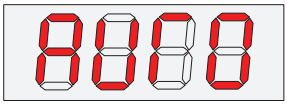
RS-485 Node ID from DIP Switch

1. Plug in the 4 pin RS-485 cable.
2. Communication with remote controller let the motor move to **Remote State** without intervention. In this state, all the buttons in the keypad are not valid.
3. Screen will alternate show 2 screens as below if the motor is stop:

(AUTO)

4. Screen will alternate show 2 screens as below if the motor is running. (E.g. demand speed is 1900 Rpm)

(AUTO)

5. If communication between UI and remote controller lost, motor will quit **Remote State** automatically.

   Keypad should valid again. Please note there is at least ten (10) seconds time delay after remove the communication.

Benefits of Slow Flow

Reducing the flow rate of a pump significantly decreases its energy requirements while also lowering water flow resistance in your pool's equipment and plumbing. Although you may need to operate the Hydrostorm GEN2 ECO-VS 100 for a longer duration, it is much more efficient at pumping low water flow compared to high water flow. Additionally, a slower flow rate improves the efficiency of your pool's filtration system, enhancing the clarity of the water. Furthermore, your automatic chemical dosers and salt chlorinators work more effectively when the pool water circulates for a longer period.

Ultra Quiet

The Hydrostorm GEN2 ECO-VS 100 operates most efficiently and quietly at its low-speed setting. The ECO-V speed setting, which runs at 1360rpm, significantly reduces the pump's vibration, motor noise, and water turbulence, producing an ultra-low noise level of just 46.6dBA. This 1360rpm speed corresponds to a flow rate of 120 litres per minute.

Off-Peak Operation

Its low noise levels allow operation during hours restricted for conventional pool pumps. The Hydrostorm GEN2 ECO-VS 100 enables usage during off-peak electrical tariff periods without disturbing your neighbours.

Pump Start Up

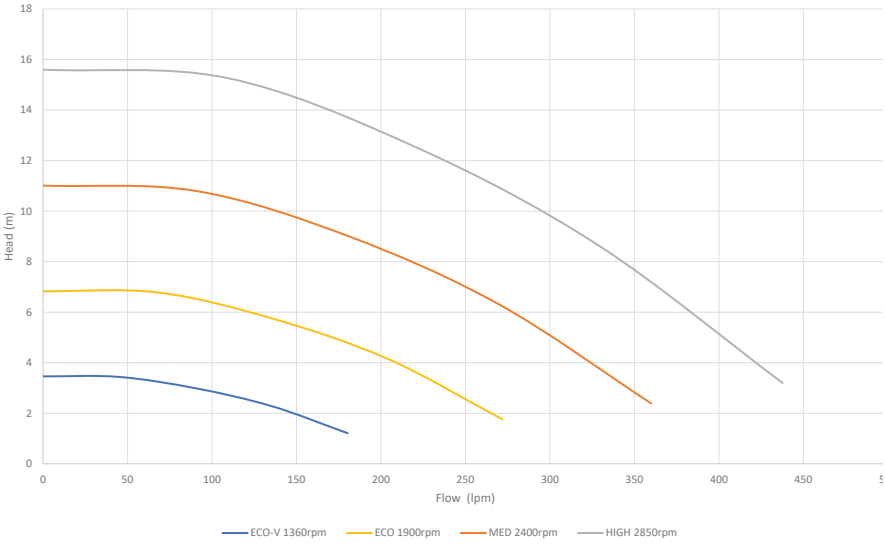
The Hydrostorm GEN2 ECO-VS 100 Variable Speed Pump is designed to start in high-speed mode when first turned on. This ensures the pump is properly primed and that there is adequate flow throughout the pool's filtration and re-circulation system.

The pump will operate at High speed for 3 minutes before switching to the pre-selected speed setting. During this initial start-up period, the light on the pre-selected speed setting button will flash. If the pre-selected speed setting is below 1900rpm, the ECO (Low) light will also flash.

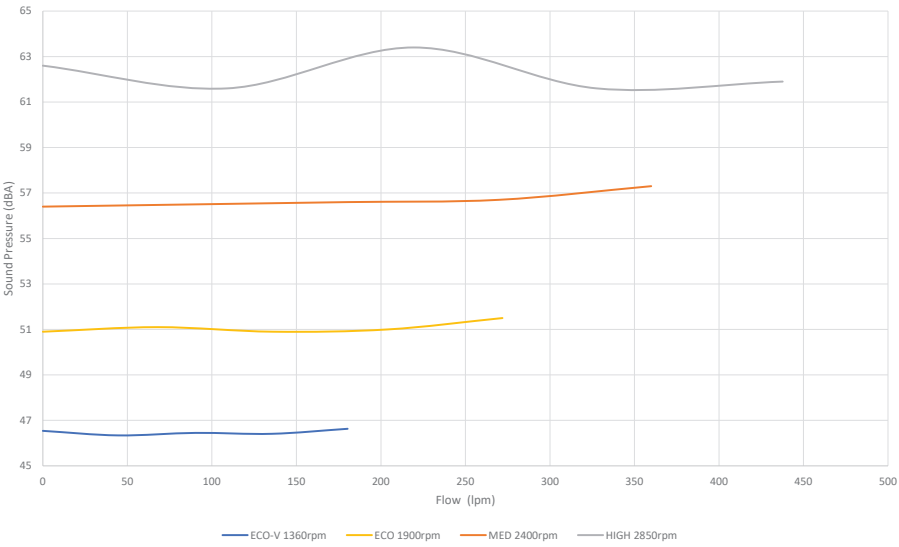
Please note that these instructions are a general guideline; each pool has unique water pressure and flow requirements. It is essential for a pool professional to size the Hydrostorm GEN2 ECO-VS 100 Variable Speed Pump appropriately to ensure efficient operation.

The charts below illustrate the water flow characteristics of the Hydrostorm GEN2 ECO-VS 100 Variable Speed Pump at 6, 8, and 10 meters of head loss, along with the minimum pump operating hours.

Hydrostorm GEN2 ECO-VS 100 Performance Curves Australasia and Asia Region



Hydrostorm GEN2 ECO-VS 100 Noise Levels Curves



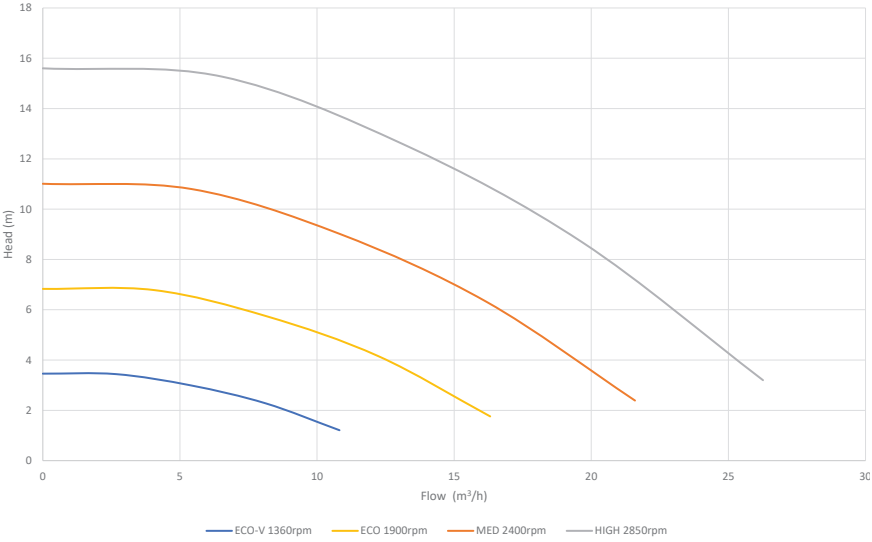
Minimum Pump Operating Hours								
Pump Speed	ECO-VS	ECO	Medium			High		
Head Loss (m)	3	6	6	8	10	6	8	10
Litre Per Hour	5,351	7,145	16,616	12,839	7,848	22,896	20,492	17,468
Pool Size (litres)								
25,000	4.7	3.5	1.5	1.9	3.2	1.1	1.2	1.4
30,000	5.6	4.2	1.8	2.3	3.8	1.3	1.5	1.7
40,000	7.5	5.6	2.4	3.1	5.1	1.7	2.0	2.3
50,000	9.3	7.0	3.0	3.9	6.4	2.2	2.4	2.9
60,000	11.2	8.4	3.6	4.7	7.6	2.6	2.9	3.4
70,000	13.1	9.8	4.2	5.5	8.9	3.1	3.4	4.0
80,000	14.9	11.2	4.8	6.2	10.2	3.5	3.9	4.6
90,000	16.8	12.6	5.4	7.0	11.5	3.9	4.4	5.1
100,000	18.7	14.0	6.0	7.8	12.7	4.4	4.9	5.7

Note: This chart is calculated using turnover of pool size (litres) once per day.

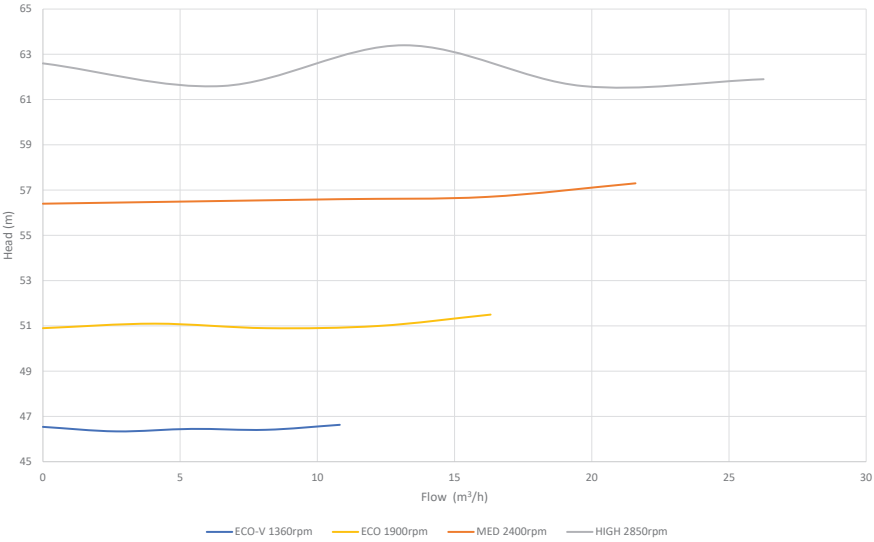
Note: During normal operation ensure your pool has sufficient circulation of water to ensure effective turnover of the pool. If there is insufficient flow of water from the pool's returns, increase the pump's operating speed till there is sufficient water flow.

Note: The Hydrostorm GEN2 ECO-VS 100 Variable Speed Pump will provide a flow rate of 120 litres per minute with a 2.57m head loss at 1360rpm in ECO-V. This has been tested in accordance with Australian Standard (AS5102.1-2019) and achieved a "6 Star Energy Rating".

Hydrostorm GEN2 ECO-VS 100 Performance Curves
UK and European Region



Hydrostorm GEN2 ECO-VS 100 Noise Levels Curves



Pumping Operating Hours 3 x Turnovers per 24 Hours								
Pump Speed	ECO-VS	ECO	Medium			High		
Head Loss (m)	3	6	6	8	10	6	8	10
M³ Per Hour	5.35	7.14	16.62	12.85	7.85	22.90	20.49	17.47
Pool Size (litres)								
25,000 (3 x PWTO - 24 H)	14.0	10.5	4.5	5.8	9.6	3.3	3.7	4.3
30,000 (3 x PWTO - 24 H)	16.8	12.6	5.4	7.0	11.5	3.9	4.4	5.2
40,000 (3 x PWTO - 24 H)	22.4	11.2	7.2	9.3	15.3	5.2	5.9	6.9
50,000 (3 x PWTO - 24 H)	N/A	21.0	9.0	11.7	19.1	6.5	7.3	8.6
60,000 (3 x PWTO - 24 H)	N/A	N/A	10.8	14.0	22.9	7.9	8.8	10.3
70,000 (3 x PWTO - 24 H)	N/A	N/A	12.6	16.4	N/A	9.2	10.2	12.0
80,000 (3 x PWTO - 24 H)	N/A	N/A	14.4	18.7	N/A	10.5	11.7	13.7
90,000 (3 x PWTO - 24 H)	N/A	N/A	16.2	21.0	N/A	11.8	13.2	15.5
100,000 (3 x PWTO - 24 H)	N/A	N/A	18.1	23.4	N/A	13.1	14.6	17.2

Note: 3 x PWTO - 24H = 3 x pool water turnover per 24-hour period.
N/A = The pump will not provide sufficient flows to meet the 3 x pool water turnover per 24-hour period.

Many local Authorities specify that a pool pump must be able to provide sufficient circulation of water to enable 3 x complete turnover of pool water every 24 hours. It is recommended that your local authorities' regulations are confirmed so that your pool equipment is correctly installed and adjusted.

The above chart is calculated using the turnover of pool size (litres) three times per day in 24hour.

Motor Protections

The unit is designed to protect itself in the event of fault situations. The fault handling is defined below:

- The drive disables power to the motor. (The motor will coast to a stop.)
- If the fault condition has cleared, the control attempts to automatically restart if a valid command signal is present. For example, if an over-temp fault has occurred, the motor will not attempt to restart the motor until the temperature has fallen below the fault threshold.
- The control will continue to cycle back through the sequence indefinitely as long as a valid command signal is present.

Under Voltage

The control turns the motor off for low voltage. When the voltage returns to acceptable operating levels the motor will automatically restart. If the condition clears, the motor will automatically restart.

Open Out Phase

When one or more of the single phase lines between the motor and control is not connected well, the output voltage in the control is not able to reach the motor. The motor will cycle through the shutdown/restart sequence the number of times specified in the Retry Count to correct the fault condition. If that is unsuccessful, the motor will stop.

Output Over Power

The control monitors the shaft output power continuously using estimated speed and torque produced by the motor shaft. The control limits the torque of the motor to maintain the shaft output power below or equal to the maximum power limit. If the overload condition reduces the speed beyond the designed operating range, the power limit fault will stop the motor.

Output Over Current

The motor performance is reduced until the current returns to normal operating parameters. If the motor is unable to reach normal operating current by reducing performance, it will turn off. If the condition clears, the motor will automatically restart.

Heatsink Hot Protection

The motor performance is reduced until the power module temperature returns to normal operating parameters. If the motor is unable to reach normal operating temperature by reducing performance, it will turn off. If the condition clears, the motor will automatically restart.

Motor Stalled

When the control detects the rotor is locked, the motor will shut down and automatically restart when operating conditions are within specifications.

Hardware Protection

Fuse Protection

The unit includes fuse protection to meet UL® component failure testing.
Fuses are not user serviceable and are intended to last the life of the product.

Inrush Protection

The inverter limits the inrush current to less than 150Amps peak surge. The duration is less than 5 milliseconds.

Fault Conditions

The motor is designed to protect itself in the event of a fault situation. Should the motor encounter a fault, the error light on the user interface display (UI) illumines and the screen shows basic information related to the problem. Fault conditions are of two general types.

- **Self-Clearing (SC)** – You cannot cancel a Self-Clearing fault condition. The source of the fault must be corrected before the fault is cleared from the UI display. For example, if a module over temperature fault is raised, the module temperature must decrease to an acceptable value before the fault clears. The **Retry Count** on a self-clearing fault cannot be reset by the user.
- **Not Self-Clearing** – Fault conditions that are not self-clearing will retry a set number of times at specified intervals. After all retry attempts are exhausted, the motor will stop. If the fault condition permits a **User Reset** of the **Retry Count**, pressing **STOP**, **ECO**, **MED or HIGH** resets the **Retry Count** back to zero (0) and allows the motor to attempt running again.

E 0 – Overcurrent (HW)

Self-Clearing (No), Retry Count (15), Retry Delay (12 seconds), User Reset (Yes)

The motor phase current is input current enabling the pump to run under at a specified speed or torque. The average phase current for output for this model is about 3.8Amps. The hardware over current threshold is 9.45Amps. Phase current over the peak threshold will trigger an overcurrent (HW) fault. The pump will shut down and automatically restart. The motor will cycle through the shutdown/restart sequence the number of times specified in the Retry Count to correct the fault condition. At the end of the sequence, if the fault has not corrected itself, the motor will not restart.

The fault condition can be triggered by the motor, the control, or the pump system. Press the **STOP**, **ECO**, **MED or HIGH** button to clear the fault from the screen. The retry sequence will start over. If the fault continues to occur, contact your pool professional or a qualified electrician for service.

E 1 – Undervoltage

Self-Clearing (Yes), Retry Count (15), Retry Delay (12 seconds), User Reset (No)

The voltage to the motor/control conduit box terminals must be 230-240Vac +/- 10%, 50 Hertz. A sustained input voltage significantly below the chosen setting will cause an undervolts trip to occur.

When the fault occurs, the pump will shut down and automatically restart when operating conditions are within specifications. The pump will cycle through the shutdown/restart sequence the number of times specified in the Retry Count to correct the fault condition.

When the input voltage returns to normal state, the fault clears automatically and the motor will restart. If the fault continues to occur after verifying the input line voltage is correct, call your pool professional or a qualified electrician for service.

E 3 – Motor Stalled

Self-Clearing (No), Retry Count (50), Retry Delay (12 seconds), User Reset (Yes)

This fault indicates that the rotor is locked. When the software detects a locked rotor, the motor will shut down and automatically restart. The pump will cycle through the shutdown/restart sequence the number of times specified in the Retry Count to correct the fault condition.

Press the **STOP**, **ECO**, **MED or HIGH** button to clear the fault from the screen. The retry sequence will start over. If the fault continues to occur after a maintenance inspection, call your pool professional or a qualified electrician for service.

E 4 – Heatsink Hot

Self-Clearing (Yes), Retry Count (0), Retry Delay (0 seconds), User Reset (No)

The power module is an integrated circuit in the motor control. Software in the control continuously monitors the temperature of this component. If the temperature in the power module exceeds a specified threshold, the motor will stop to prevent the power module from overheating and damaging to the motor.

After the temperature in the power module drops below the threshold number, the pump will automatically restart and clear the fault from the screen.

E 5 – Open Output Phase

Self-Clearing (No), Retry Count (50), Retry Delay (12 seconds), User Reset (Yes)

An open output phase indicates that one or more of the three phase lines between the motor and control is not connected well. The output voltage in the control is not able to reach the motor. The pump will cycle through the shutdown/restart sequence the number of times specified in the Retry Count to correct the fault condition. If that is unsuccessful, the motor will stop.

Press the **STOP**, **ECO**, **MED or HIGH** button to clear the fault from screen. The retry sequence will start over. If the fault continues to occur after verifying the wire connections, call your pool professional or a qualified electrician for service.

E 8 – MC EE Error

Self-Clearing (No), Retry Count (50), Retry Delay (12 seconds), User Reset (Yes)

This fault indicates that an error occurred in the memory area of the chip used to store software information about the motor and control. For some reason the software was unable to read key values from memory.

Press the **STOP**, **ECO**, **MED or HIGH** button to clear the fault from the screen. The retry sequence will start over. If the fault continues to occur after verifying the wire connections, call your pool professional or a qualified electrician for service.

E 10 – Run Dry Protection

Self-Clearing (No), Retry Count (0), Retry Delay (0 seconds), User Reset (Yes)

Motor is running but the feedback from flow check valve indicates no water flow in the pipe. When that happens, the motor shuts down.

If you do not mounting the flow check valve, should check the jumper in the interface board is OK. Otherwise, please check the pipe connection.

Press the **STOP**, **ECO**, **MED or HIGH** button to clear the fault from the screen and restart the motor.

E 11 – MC Comm Lost

Self-Clearing (Yes), Retry Count (0), Retry Delay (0 seconds), User Reset (No)

The motor somehow lost communication with the User Interface. When that happens, the motor will run 2850rpm and cannot stop by User Interface. E11 alarm will be brought up in UI. In this case, you have to pull out the power cord to stop the motor.

If the fault continues to occur, call your pool professional or a qualified electrician for service.

E 12 – User Interface Key Stuck

Self-Clearing (No), Retry Count (0), Retry Delay (0 seconds), User Reset (Yes)

The **STOP** button is stuck. If that should happen, the motor shuts down. Press the **STOP** button to see if you can release it. If the fault continues to occur after verifying the wire connections, call your pool professional or a qualified electrician for service.

E 13 – User Interface EE failure

Self-Clearing (No), Retry Count (0), Retry Delay (0 seconds), User Reset (No)

This fault indicates that an error occurred in the memory area of the chip used to store User Interface parameters when configuring the pump. For some reason the software was unable to read the values from memory.

If the fault continues to occur after powering up the motor, call your pool professional or a qualified electrician for service.

Controller fault

If the issue persists and the pump fails to run, please check the fault indicators below:

E 0 – Overcurrent (HW)
E 1 – Undervoltage
E 3 – Motor Stalled
E 4 – Heatsink Hot
E 5 – Open Output Phase
E 8 – MC EE Error

User Interface fault

E 11 – MC Comm Lost
E 12 – User Interface Key Stuck
E 13 – User Interface EE failure
E 10 – Run Dry Protection

This function is controlled by a switch. If the flow check valve hasn't plugged in the 2 pins connector, please disable it through the flow check valve bypass switch.

⚠ WARNING

The Hydrostorm GEN2 ECO-VS 100 Speed Pump is equipped with the latest motor that utilises electronic PCB's & microchips for pump control & protection.

When the pump is turned off, it will be necessary to delay restarting the pump for a minimum of 30 seconds. This will ensure the pump electronics has totally reset.

However, in some situations electronically controlled chlorinators may provide a small residual of power to the Hydrostorm GEN2 ECO-VS 100 variable speed pump preventing the resetting of the pumps electronics. In this case the power to the chlorinator and pump must be totally disconnected to enable the electronics to reset.

It is recommended that you contact the supplier or manufacturer of your chlorinator to gain any further assistance or advice with this issue.

• 中文

Hydrostorm GEN2 ECO–VS 100 变速水泵操作指南

Hydrostorm GEN2 ECO–VS 100 配备最新款 3 档变速永磁无刷直流电机；Hydrostorm GEN2 ECO–VS 100 能降低能耗并减少运行噪音。

节能

泳池过滤系统无需以水泵最大流量运行。实际上，较低流量反而能提升泳池过滤与氯化效率。由于过滤循环占水泵运行时间的 99%，因此 Hydrostorm GEN2 ECO–VS 100 主要在低速 (ECO) 档位运行即可。此举最高可节省 80% 的能源。

Hydrostorm GEN2 ECO–VS 100 的 3 档变速选项

Hydrostorm GEN2 ECO–VS 100 设有 3 个出厂预设速度选项：ECO（低速）、MED（中速）及 HIGH（高速）。此外，运行速度支持以 10 rpm 为增量进行微调，从而精准匹配泳池流量需求，实现节能与降噪效果最大化。Hydrostorm GEN2 ECO–VS 100 在 ECO（低速）档位下运行最经济，且噪音最低。Hydrostorm GEN2 ECO–VS 100 具备变速控制功能，转速范围为 1000 至 2850 rpm（每分钟转数）。水泵转速可在控制面板显示屏上查看。

ECO（低速 1900 rpm）：过滤——99% 的运行时间使用此档位。在再循环系统未连接任何辅助泳池设备时，这是运行过滤系统最经济的速度。例如：吸污机。

中速（2400 rpm）：自动泳池清洁器。此速度可驱动需要使用吸污机及低压按摩喷嘴的辅助泳池清洁设备，满足泳池清洁等功能需求。

高速（2850 rpm）：吸污与反冲洗——1% 的运行时间使用此档位。此为强力档，适用于反冲洗颗粒介质过滤器（如砂缸）、手动泳池吸污以及运行高水压需求的泳池设备。
例如：水景设施与按摩喷嘴。



停止：此操作将取消在上述三个出厂设置之外所做的任何变速调整。

电源：水泵运行时此指示灯常亮。

错误：若此灯亮起，请联系泳池设备供应商或门店获取维护建议。

请注意：ECO（低速）档位专为标准泳池过滤与循环系统设计，同时支持以 10 rpm 为增量进行微调，以契合特定泳池的流量需求。

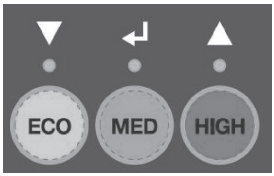
调整 ECO（低速）、MED（中速）及 HIGH（高速）设置

1. 在 Hydrostorm GEN2 ECO–VS 100 运行期间，按住所需的速度设置按钮 3 秒或直到指示灯闪烁。此操作可将出厂设置的转速向上或向下调整。

2. 要降低出厂速度设置，请选择并按下速度按钮，指示灯将开始闪烁。按下带有向下箭头的 ECO（低速）按钮，每按一次转速降低 10 rpm，直到达到所需的运行转速。

3. **请注意：**水泵电机的最低运行转速为 1000 rpm。

4. 要提高出厂速度设置，请选择并按下速度按钮，此时指示灯会闪烁。按下带有向上箭头的 HIGH（高速）按钮，每按一次转速提高 10 rpm，直到达到所需的水泵运行转速 (rpm)。



5. **请注意：**水泵电机的最高运行转速为 2850 rpm。

6. 长按速度按钮 3 秒直到指示灯开始闪烁，随后按下带有向下箭头的 ECO（低速）按钮或带有向上箭头的 HIGH（高速）按钮并按住不放（不要松开），即可实现以 100 rpm 为单位进行递增或递减，转速将持续增加或减少，直到松开按钮或达到 2850 rpm 的最高转速或 1000 rpm 的最低转速。



7. 要保存此变速调整，请按下 MED（中速）按钮，水泵将应用该更改。



8. 按下 STOP（停止）按钮将取消在上述三个出厂设置之外进行的任何变速调整。



9. 如果 30 秒内未按任何按钮，电机将自动恢复到先前设定的运行设置。

请确保根据泳池设备选择正确的水泵转速，且转速满足泳池循环需求。

自吸功能

启用/禁用自吸功能
您可以开启或关闭自吸功能。为此，请确保电机处于待机状态。接着，同时按住 MED（中速）和 STOP（停止）按钮三（3）秒。屏幕显示“OFF（关闭）”，表示自吸功能已关闭。松开按钮后，自吸状态即可更改。显示屏将再次显示“OFF（关闭）”，这意味着如果先前已启用自吸功能，现在则会禁用，反之如先前已禁用，现在则会启用。

自定义自吸定时器
您可以在电机处于待机模式时设置自吸定时器。操作方法为：同时按住 ECO（低速）和 STOP（停止）按钮三（3）秒。显示屏将显示当前的自吸时间（以分钟为单位），默认值为 3 分钟。
- 按下 ECO（低速）按钮可将定时器减少 10 分钟。
- 按下 HIGH（高速）按钮可将定时器增加 10 分钟。
- 定时器设置不得超过 240 分钟或低于 1 分钟。

自吸定时器的默认设置为 3 分钟。如果在 3 分钟时按一次 HIGH（高速）按钮，新设置将变为 10 分钟。同样，如果时间处于 3 分钟时按下 ECO（低速）按钮一次，定时器将变为 1 分钟。可用的自吸定时器设置如下：1、3、10、20、30 分钟，最高可达 240 分钟。

自定义自吸速度
用户可以调整自吸速度。操作方法为：在水泵电机处于待机模式下，同时按住 HIGH（高速）键和 STOP（停止）键三 (3) 秒钟。屏幕将以每分钟转数（rpm）显示自吸速度，出厂设置默认值为 2850 rpm。
- 按下 ECO（低速）键将降低 100 rpm 速度设置。
- 按下 HIGH（高速）键将增加 100 rpm 速度设置。
- 自吸速度不得超过 2850 rpm 或低于 1000 rpm。

默认速度设置值为 2850 rpm。如果在 2850 rpm 时按下 ECO（低速）键一次，新的自吸速度将设为 2800 rpm。可用的自吸速度设置如下：1000、1100、1200 rpm，以此类推，最高可达 2800 rpm 和 2850 rpm。

出厂默认设置

出厂默认设置如下：

ECO （低速）	: 1900rpm
MED （中速）	: 2400rpm
HIGH （高速）	: 2850rpm
自吸启用	： 已启用

要恢复出厂默认设置，按下 STOP（停止）键返回待机模式，然后同时按住 ECO（低速）+ MED（中速）+ HIGH（高速）键 3 秒钟，三个速度指示灯全部点亮。当水泵电机恢复出厂设置且指示灯熄灭时，松开按钮

流量止回阀与干转保护

可选的流量止回阀通过铝制外壳侧面的 2 针插座连接。旁路开关必须与安装情况相匹配。

旁路开关	功能
ON（开启）/ 左侧	流量止回阀旁路
OFF（关闭）/ 右侧	流量止回阀已连接且处于活动状态

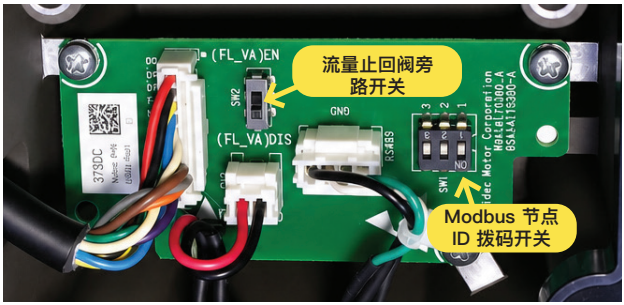
在运行和速度调节模式下激活干转保护。水泵电机启动后有 3 分钟延迟。如果持续 3 秒钟无水流，水泵电机将停止并触发干转警报

远程控制：RS–485 / Modbus

- 将兼容的 4 针 RS–485 电缆连接到铝制水泵控制箱外壳侧面的 RS–485 插座。
- 建立远程通信后，水泵电机进入远程状态，键盘按钮失效。
- 水泵电机会执行来自外部控制器的指令。
- 如果通信中断，水泵电机将退出远程状态，在延迟至少 10 秒后，键盘将恢复活动状态。
- 请勿在现场调整产品的拨码开关（参见下图）。



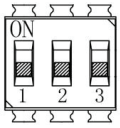
RS485 与流量止回阀接头



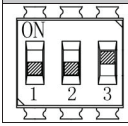
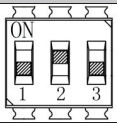
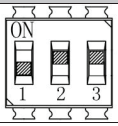
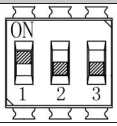
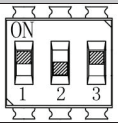
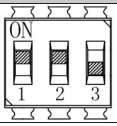
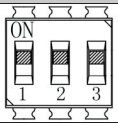
流量止回阀旁路开关

远程连接布线

用户可以将 RS485 兼容电缆连接到铝制水泵控制箱外壳侧面的 RS485 插座，以便连接外部控制器（见前一页图片）。切勿在现场调整拨码开关。如果拨码开关处于以下状态，则节点 ID 设为 240，

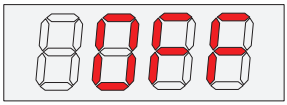
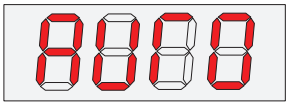


否则：

节点 1	节点 2	节点 3	节点 4	节点 5	节点 6	节点 7
						

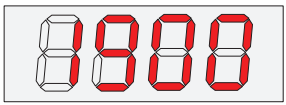
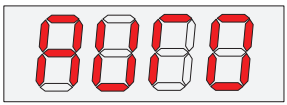
来自拨码开关的 RS–485 节点 ID

1. 插入 4 针 RS–485 电缆。
2. 与远程控制器进行通信，会让水泵电机自动进入**远程状态**。在此状态下，键盘上的所有按钮均无效。
3. 如果水泵电机停止，将交替显示以下 2 种屏幕：

(AUTO/自动)

4. 如果水泵电机运行，将交替显示以下 2 种屏幕。（例如需求速度为 1900 rpm）

(AUTO/自动)

5. 如果用户界面与远程控制器之间的通信中断，水泵电机将自动退出**远程状态**。键盘将恢复有效。请注意，切断通信后至少存在十 (10) 秒的延时。

低流量的优势

降低水泵流量会大幅减少能耗，并降低池内设备与管路的阻力。尽管您可能需要延长 Hydrostorm GEN2 ECO–VS 100 的运行时间，但相比高流量抽水，低流量抽水的效率高得多。此外，较低的流量能改善过滤系统的工作效率，并提升水质清澈度。并且，当池水循环时间延长时，自动加药机和盐氯机的工作效果会更好。

超静音

Hydrostorm GEN2 ECO–VS 100 在低速档位下运行效率最高且最为安静。ECO–V 档位转速为 1360 rpm，大幅减弱了水泵振动、电机噪音和水流紊流，仅产生 46.6 dBA 的超低噪音。1360 rpm 的转速对应每分钟 120 升的流量。

低谷电价时段运行

具备低噪音特性，因而能够在常规水泵受限的时段内运行。Hydrostorm GEN2 ECO–VS 100 能够在低谷电价时段运行，且不会打扰邻居。

水泵启动

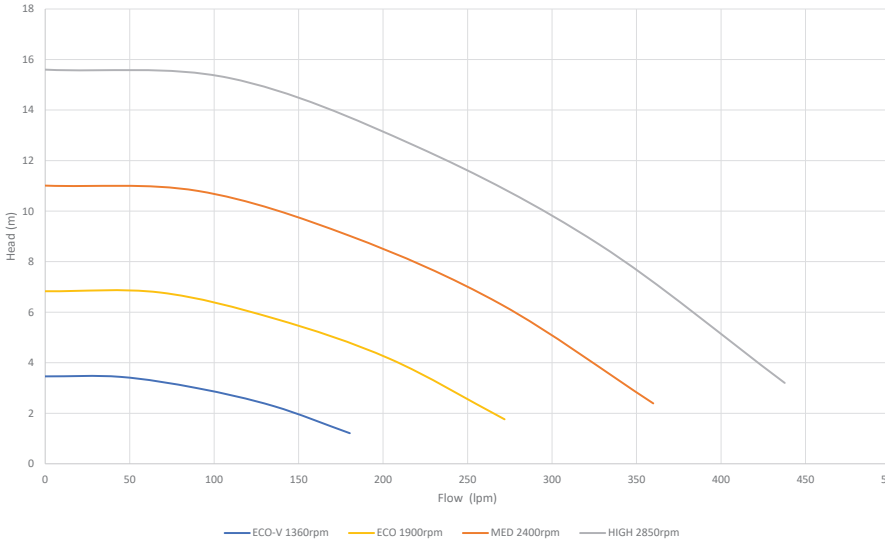
Hydrostorm GEN2 ECO–VS 100 变速水泵在初次开启时默认以高速模式启动。此功能保证水泵顺利完成自吸，且过滤及再循环系统中具备充足的水流量。

水泵将以高速运行 3 分钟，随后切换至预选速度档位。在该初始启动阶段，预选速度按钮上的指示灯会闪烁。如果预选速度档位低于 1900 rpm，ECO (低速) 指示灯也会闪烁。

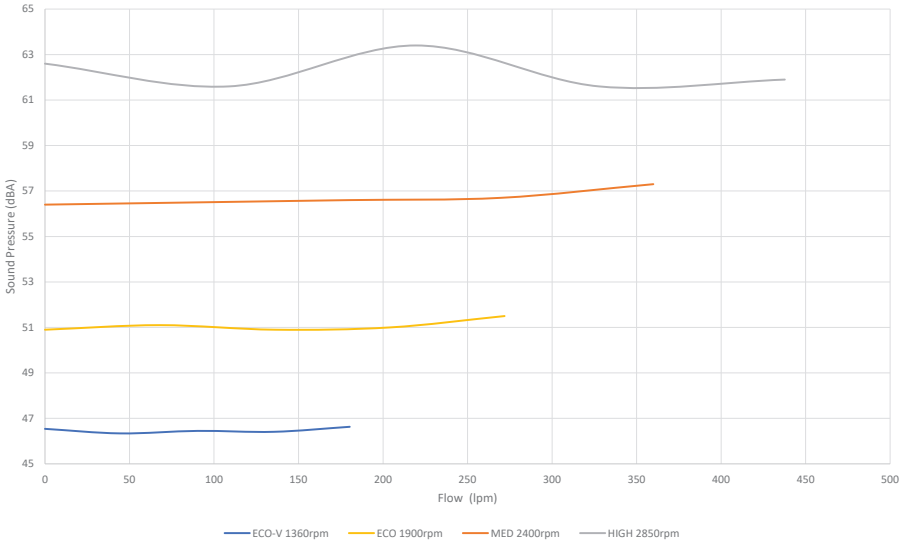
请注意，这些说明仅为通用指南；每个泳池的水压和流量需求各不相同。泳池专业人员必须配置合适规格的 Hydrostorm GEN2 ECO–VS 100 变速水泵，保证其高效运行。

下表展示了 Hydrostorm GEN2 ECO–VS 100 变速水泵在 6 米、8 米和 10 米扬程损失下的水流量特性，以及水泵最低运行时间。

Hydrostorm GEN2 ECO-VS 100 澳大拉西亚及亚洲地区性能曲线



Hydrostorm GEN2 ECO-VS 100 噪音曲线



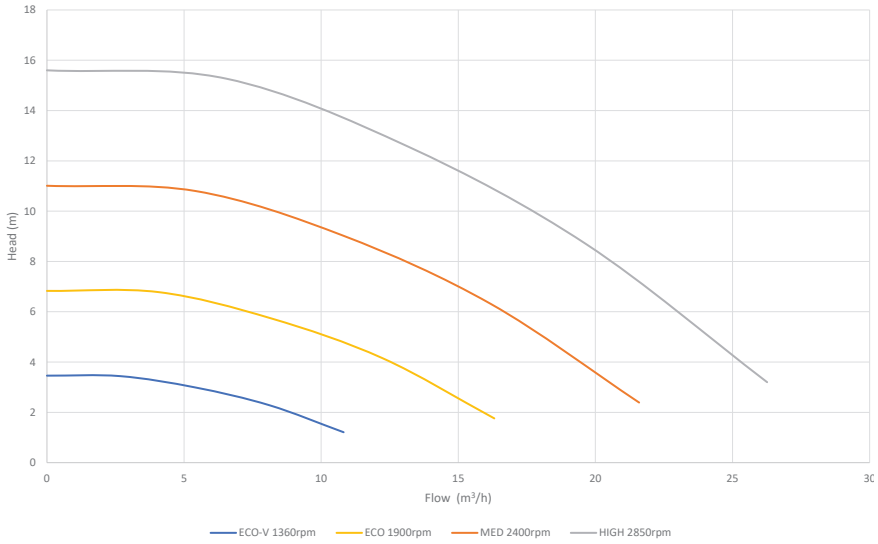
水泵最短运行时间								
泵速	ECO–VS	ECO (低速)	中速			高速		
扬程损失 (m)	3	6	6	8	10	6	8	10
每小时升数	5,351	7,145	16,616	12,839	7,848	22,896	20,492	17,468
泳池容量 (升)								
25,000	4.7	3.5	1.5	1.9	3.2	1.1	1.2	1.4
30,000	5.6	4.2	1.8	2.3	3.8	1.3	1.5	1.7
40,000	7.5	5.6	2.4	3.1	5.1	1.7	2.0	2.3
50,000	9.3	7.0	3.0	3.9	6.4	2.2	2.4	2.9
60,000	11.2	8.4	3.6	4.7	7.6	2.6	2.9	3.4
70,000	13.1	9.8	4.2	5.5	8.9	3.1	3.4	4.0
80,000	14.9	11.2	4.8	6.2	10.2	3.5	3.9	4.6
90,000	16.8	12.6	5.4	7.0	11.5	3.9	4.4	5.1
100,000	18.7	14.0	6.0	7.8	12.7	4.4	4.9	5.7

请注意：此图表按每天泳池容量 (升) 循环一次计算得出。

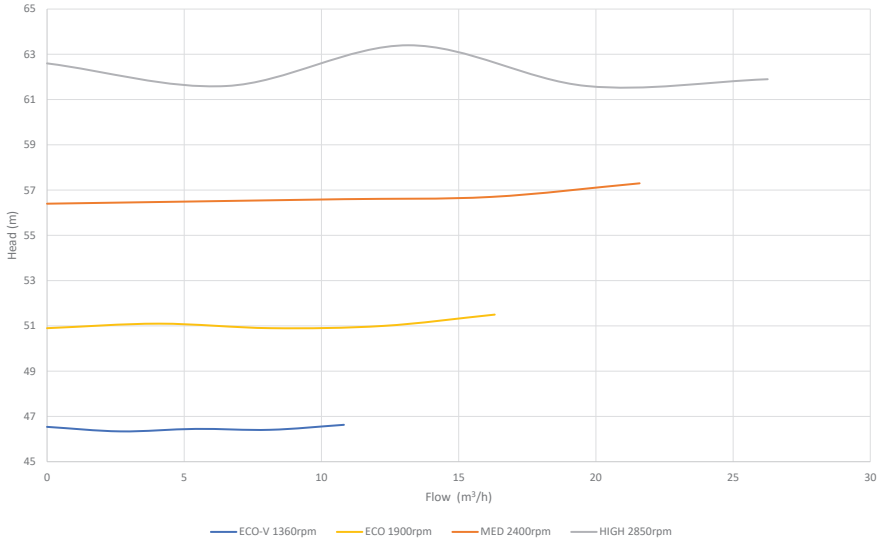
请注意：在日常运行期间，确保池水充分循环以实现有效更新。如果泳池回水口水流不足，应调高水泵运行速度直至水量充足。

请注意：Hydrostorm GEN2 ECO–VS 100 变速水泵在 ECO–V 模式、转速 1360 rpm、扬程损失 2.57m 的条件下，流量可达每分钟 120 升。该数据经过澳大利亚标准 (AS5102.1–2019) 测试验证，并获得“6 星级能效评级”。

Hydrostorm GEN2 ECO–VS 100 性能曲线，英国和欧洲地区



Hydrostorm GEN2 ECO–VS 100 噪音曲线



水泵运行时间每 24 小时进行 3 次循环								
泵速	ECO–VS	ECO（低速）	Medium			High		
扬程损失 (m)	3	6	6	8	10	6	8	10
每小时立方米	5.35	7.14	16.62	12.85	7.85	22.90	20.49	17.47
泳池容量 (升)								
25,000 (3 x PWTO – 24 H)	14.0	10.5	4.5	5.8	9.6	3.3	3.7	4.3
30,000 (3 x PWTO – 24 H)	16.8	12.6	5.4	7.0	11.5	3.9	4.4	5.2
40,000 (3 x PWTO – 24 H)	22.4	11.2	7.2	9.3	15.3	5.2	5.9	6.9
50,000 (3 x PWTO – 24 H)	N/A	21.0	9.0	11.7	19.1	6.5	7.3	8.6
60,000 (3 x PWTO – 24 H)	N/A	N/A	10.8	14.0	22.9	7.9	8.8	10.3
70,000 (3 x PWTO – 24 H)	N/A	N/A	12.6	16.4	N/A	9.2	10.2	12.0
80,000 (3 x PWTO – 24 H)	N/A	N/A	14.4	18.7	N/A	10.5	11.7	13.7
90,000 (3 x PWTO – 24 H)	N/A	N/A	16.2	21.0	N/A	11.8	13.2	15.5
100,000 (3 x PWTO – 24 H)	N/A	N/A	18.1	23.4	N/A	13.1	14.6	17.2

请注意： 3 x PWTO – 24H = 每 24 小时进行 3 次池水循环。

N/A = 水泵无法提供充足流量以满足每 24 小时进行 3 次池水循环的要求。

许多地方监管部门规定，泳池水泵必须具备充足的水循环能力，以便每 24 小时完成 3 次池水循环。建议核实地方监管部门的规章制度，以便正确安装和调节泳池设备。

上表根据每天 24 小时内泳池容量（升）三次循环进行计算。

电机保护

本机具备故障情况下的自我保护功能。故障处理方式如下：

- 驱动器切断电机电源。（电机将惯性运行至停止。）
- 如果故障状态已消除，且存在有效指令信号，控制器将尝试自动重新启动。例如，如果发生过热故障，电机在温度降至故障阈值以下之前不会尝试重新启动。
- 只要存在有效指令信号，控制器将无限期地循环执行该序列。

欠压

控制器在低电压时关闭电机。当电压恢复至可接受的运行水平时，电机将自动重新启动。如果故障状态消除，电机将自动重新启动。

输出缺相

当电机和控制器之间的单相线路有一根或多根连接不良时，控制器的输出电压无法传输至电机。电机将按重试次数中指定的次数循环执行停机/重启序列以纠正故障状态。如果纠正不成功，电机将停止。

输出过功率

控制器使用电机轴产生的估计转速和扭矩持续监测轴输出功率。控制器会限制电机扭矩，使轴输出功率保持在最大功率极限以下或等于最大功率极限。如果过载状态导致转速超出设计运行范围，功率极限故障将导致电机停止运行。

输出过电流

降低水泵电机性能，直至电流恢复正常运行参数。如果电机降低性能后仍无法达到正常运行电流，便会停机。如果故障状态消除，电机将自动重新启动。

散热器高温保护

降低水泵电机性能，直至功率模块温度恢复正常运行参数。如果电机降低性能后仍无法达到正常运行温度，便会停机。如果故障状态消除，电机将自动重新启动。

电机堵转

控制系统检测到转子锁定后，水泵电机将停机，并在运行条件符合规范时自动重新启动。

硬件保护

保险丝保护

设备包含保险丝保护，符合 UL® 组件故障测试要求。保险丝不可由用户自行维护，且设计寿命与产品寿命相同。

浪涌保护

变频器将浪涌电流限制在 150Amps 峰值浪涌以下。持续时间小于 5 毫秒。

故障状态

本电机具备故障情况下的自我保护功能。如果电机发生故障，用户界面显示屏 (UI) 上的故障指示灯点亮，屏幕显示与该问题相关的基本信息。故障状态分为两种常规类型。

- **自清除 (SC)** — 无法取消自清除故障状态。必须排除故障根源，才能清除 UI 显示屏上的故障。例如，如果引发模块过温故障，模块温度必须降至可接受的数值，故障才会清除。用户无法重置自清除故障的**重试次数**。
- **非自清除** — 不属于自清除的故障状态将按照指定间隔重试设定次数。重试次数耗尽后，水泵电机将停止运转。如果故障状态允许用户重置重试次数，按下 STOP（停止）、ECO（低速）、MED（中速）或 HIGH（高速）按钮可将重试次数重置为零 (0)，并可让水泵电机再次尝试运行。

E 0 — 过电流 (HW)

自清除 (否)、重试次数 (15)、重试延迟 (12 秒)、用户重置 (是)

电机相电流是输入电流，使水泵能够按指定转速或扭矩运行。此型号输出的平均相电流约为 3.8Amps.硬件过电流阈值为 9.45Amps。相电流超过峰值阈值会触发过电流 (HW) 故障。水泵将停机并自动重新启动。电机将按重试次数中指定的次数循环执行停机/重启序列以纠正故障状态。程序序列结束时，如果故障未自行解除，水泵电机不会重新启动。

故障可能由电机、控制器或泵系统引起。按下 **STOP（停止）、ECO（低速）、MED（中速）或 HIGH（高速）**按钮清除显示屏上的故障。重试程序将重新开始。如果故障持续出现，请联系泳池专业人员或合格电工检修。

E 1 — 欠压

自清除（是），重试次数（15），重试延迟（12 秒），用户重置（否）

电机/控制器接线盒端子的电压必须为 230~240Vac +/– 10%、50 Hertz。持续的输入电压显著低于设定值会引发欠压跳闸。

故障发生时，水泵停机，并在运行条件恢复正常时自动重新启动。水泵将按重试次数中指定的次数循环执行停机/重启序列以纠正故障状态。

输入电压恢复正常时，故障自动清除，电机重新启动。如果核实输入线电压正常后故障仍持续出现，请联系泳池专业人员或合格电工检修。

E 3 — 电机堵转

自清除 (否)、重试次数 (50)、重试延迟 (12 秒)、用户重置 (是)

该故障表明转子被锁定。软件检测到转子锁定时，电机停机并自动重新启动。水泵将按重试次数中指定的次数循环执行停机/重启序列以纠正故障状态。

按下 **STOP（停止）、ECO（低速）、MED（中速）或 HIGH（高速）**按钮清除显示屏上的故障。重试程序将重新开始。维护检查后故障仍持续出现时，请联系泳池专业人员或合格电工检修。

E 4 — 散热器过热

自清除（是），重试次数（0），重试延迟（0 秒），用户重置（否）

功率模块是电机控制器中的集成电路。控制器中的软件持续监测该组件的温度。功率模块温度超过指定阈值时，电机停止运转，防止功率模块过热并损坏电机。

功率模块温度降至阈值以下后，水泵自动重新启动并清除显示屏上的故障。

E 5 — 输出缺相

自清除 (否)、重试次数 (50)、重试延迟 (12 秒)、用户重置 (是)

输出缺相表明电机与控制器之间的三相线路有一根或多根连接不良。控制器的输出电压无法传输至电机。水泵将按重试次数中指定的次数循环执行停机/重启序列以纠正故障状态。如果纠正不成功，电机将停止。

按下 **STOP（停止）、ECO（低速）、MED（中速）或 HIGH（高速）**按钮清除显示屏上的故障。重试程序将重新开始。如果核实接线无误后故障仍持续出现，请联系泳池专业人员或合格电工检修。

E 8 — MC EE 错误

自清除 (否)、重试次数 (50)、重试延迟 (12 秒)、用户重置 (是)

该故障表明存储电机和控制器软件信息的芯片存储区发生错误。软件因故无法从内存读取关键值。

按下 **STOP（停止）、ECO（低速）、MED（中速）或 HIGH（高速）**按钮清除显示屏上的故障。重试程序将重新开始。如果核实接线无误后故障仍持续出现，请联系泳池专业人员或合格电工检修。

E 10 — 干转保护

自清除 (否)、重试次数 (0)、重试延迟 (0 秒)、用户重置 (是)

电机正在运行，但来自流量止回阀的反馈表明管道内无水流。此情况发生时，水泵停机。

未安装流量止回阀时，应检查接口板上的跳线是否正常。否则，请检查管道连接。

按下 **STOP（停止）、ECO（低速）、MED（中速）或 HIGH（高速）**按钮清除显示屏上的故并重新启动电机。

E 11 — MC 通信丢失

自清除（是），重试次数（0），重试延迟（0 秒），用户重置（否）

电机因故与用户界面失去通信。此情况发生时，电机将以 2850 rpm 运行且无法通过用户界面停止。UI 中将出现 E11 警报。此情况下，必须拔下电源线才能停止电机。

如果故障持续出现，请致电泳池专业人员或合格电工检修。

E 12 — 用户界面按键卡住

自清除 (否)、重试次数 (0)、重试延迟 (0 秒)、用户重置 (是)

STOP（停止）按钮卡住。发生这种情况时，电机停机。按下 **STOP（停止）**按钮，尝试将其释放。如果核实接线无误后故障仍持续出现，请联系泳池专业人员或合格电工检修。

E 13 — 用户界面 EE 故障

自清除（否），重试次数（0），重试延迟（0 秒），用户重置（否）

此故障表明配置水泵时，存储用户界面参数的芯片内存区域发生错误。软件因故无法从内存读取数值。

如果重新给电机上电后故障依然存在，请联系泳池专业人员或合格的电工进行检修。

控制器故障

如果问题依旧存在且水泵无法运行，请检查以下故障指示灯：E 0 — 过电流 (HW)

E 1 — 欠压 E 3 — 电机堵转 E 4 — 散热器过热

E 5 — 输出缺相 E 8 — MC EE 错误

用户界面故障

E 11 — MC 通信丢失

E 12 — 用户界面按键卡住 E 13 — 用户界面 EE 故障 E 10 — 干转保护

此功能由开关控制。如果流量止回阀未插入 2 针接头，请通过流量止回阀旁路开关禁用该功能。

⚠ 警告

Hydrostorm GEN2 ECO–VS 100 变速泵搭载先进电机，采用电子印刷电路板与微芯片实现水泵控制和保护。

关闭水泵后，必须延迟至少 30 秒才能重新启动水泵。这可确保水泵电子元件完全重置。

但在某些情况下，电子控制的盐氯机可能会向 Hydrostorm GEN2 ECO–VS 100 变速泵输送微弱的残余电流，导致水泵电子元件无法重置。这种情况下，必须彻底断开盐氯机和水泵的电源，才能重置电子元件。

建议联系盐氯机供应商或制造商，获取关于此问题的进一步协助或建议。

OFFICES – AUSTRALIA
澳大利亚办事处

NSW - SYDNEY HEAD OFFICE
总部
Tel : +61 2 9898 8686

VIC/TAS - MELBOURNE
Tel : +61 3 9764 1211

WA - PERTH
Tel : +61 8 9273 1900

QLD - BRISBANE
Tel : +61 7 3299 9900

SA/NT - ADELAIDE
Tel : +61 8 8244 6000

ACT DISTRIBUTOR
Tel : +61 2 6280 6476

OFFICES – OVERSEAS
海外办事处

WATERCO (EUROPE) LIMITED
SITTINGBOURNE, KENT, UK
TEL : +44 (0) 1795 521 733

WATERCO USA
AUGUSTA, USA
TEL : +1 706 793 7291

WATERCO CANADA
BOUCHERVILLE, QUEBEC, CANADA
TEL : +1 450 748 1421

WATERCO (NZ) LIMITED
AUCKLAND, NEW ZEALAND
TEL : +64 9 525 7570

WATERCO (C) LIMITED
GUANGZHOU, CHINA
TEL : +8620 3222 2180

WATERCO (FAR EAST) SDN BHD
SELANGOR, MALAYSIA
TEL : +60 3 6145 6000

PT WATERCO INDONESIA
JAKARTA, INDONESIA
TEL : +62 21 4585 1481

WATERCO SINGAPORE INTL PTE LTD
MIDVIEW CITY, SINGAPORE
TEL : +65 6344 2378

WATERCO VIETNAM COMPANY LIMITED
HO CHI MINH CITY, VIETNAM
TEL : +84 28 3622 7780

WATERCO MIDDLE EAST FZE
DUBAI, UNITED ARAB EMIRATES
TEL: +971 (0) 4817 0250

WATERCO

LISTED ON ASX

Waterco Limited ABN 62 002 070 733

(W99469) 10/2026