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ELECTRIC WATER PUMP

— 2024 —



Kawasaki

Let the Good Times Roll



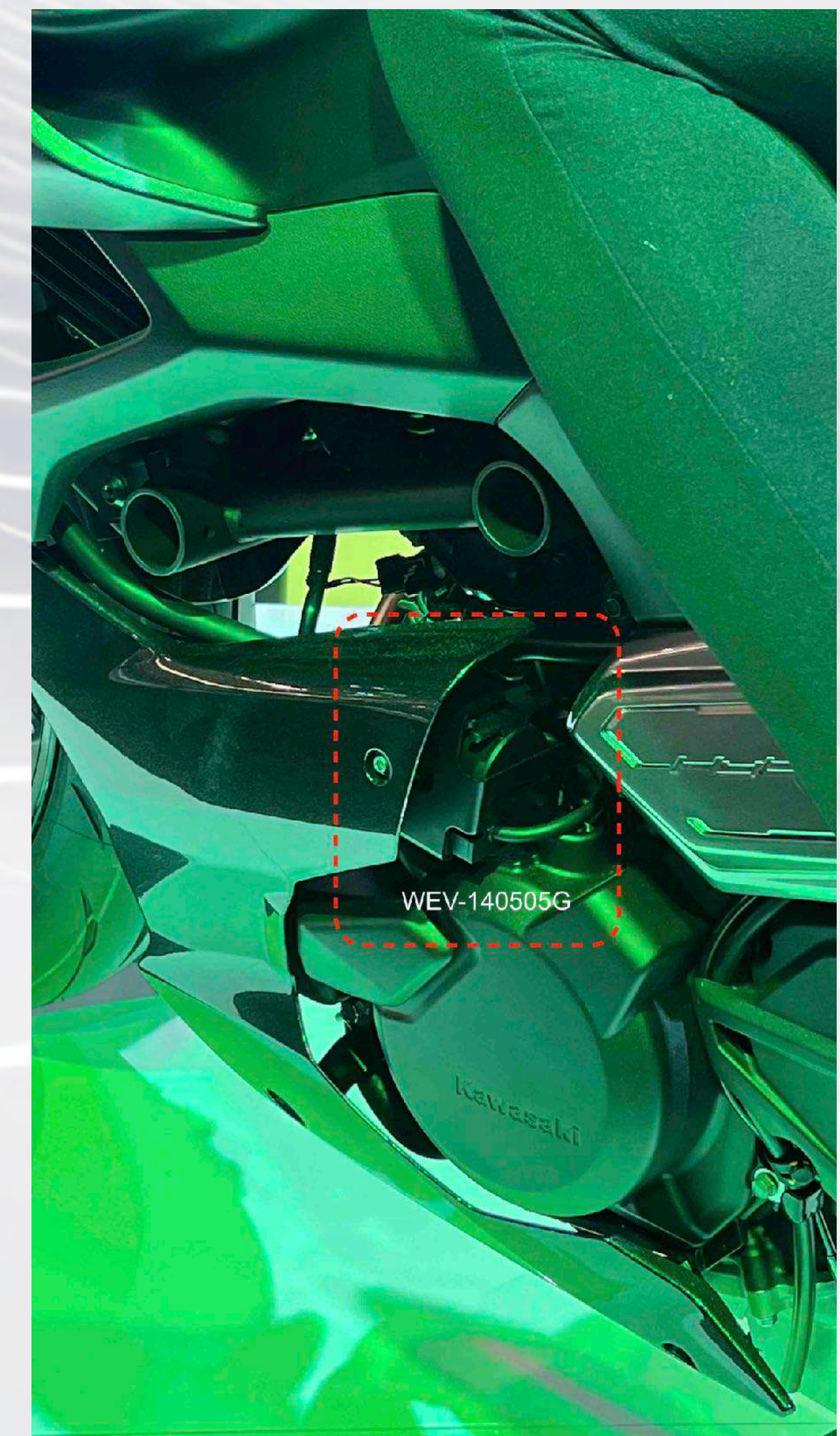


Kawasaki

Let the Good Times Roll



Ninja 7 Hybrid



ニュース

タダノ、世界初のフル電動ラフテレーンクレーン「EVOLT eGR-250N」日本導入 価格1億4800万円（税別）

編集部：椿山和雄 2023年12月6日 17:43

[ツイート](#) [リスト](#) [シェア](#) [はてブ](#) [note](#) [LinkedIn](#)

2023年12月6日 発表
1億4800万円（税別）

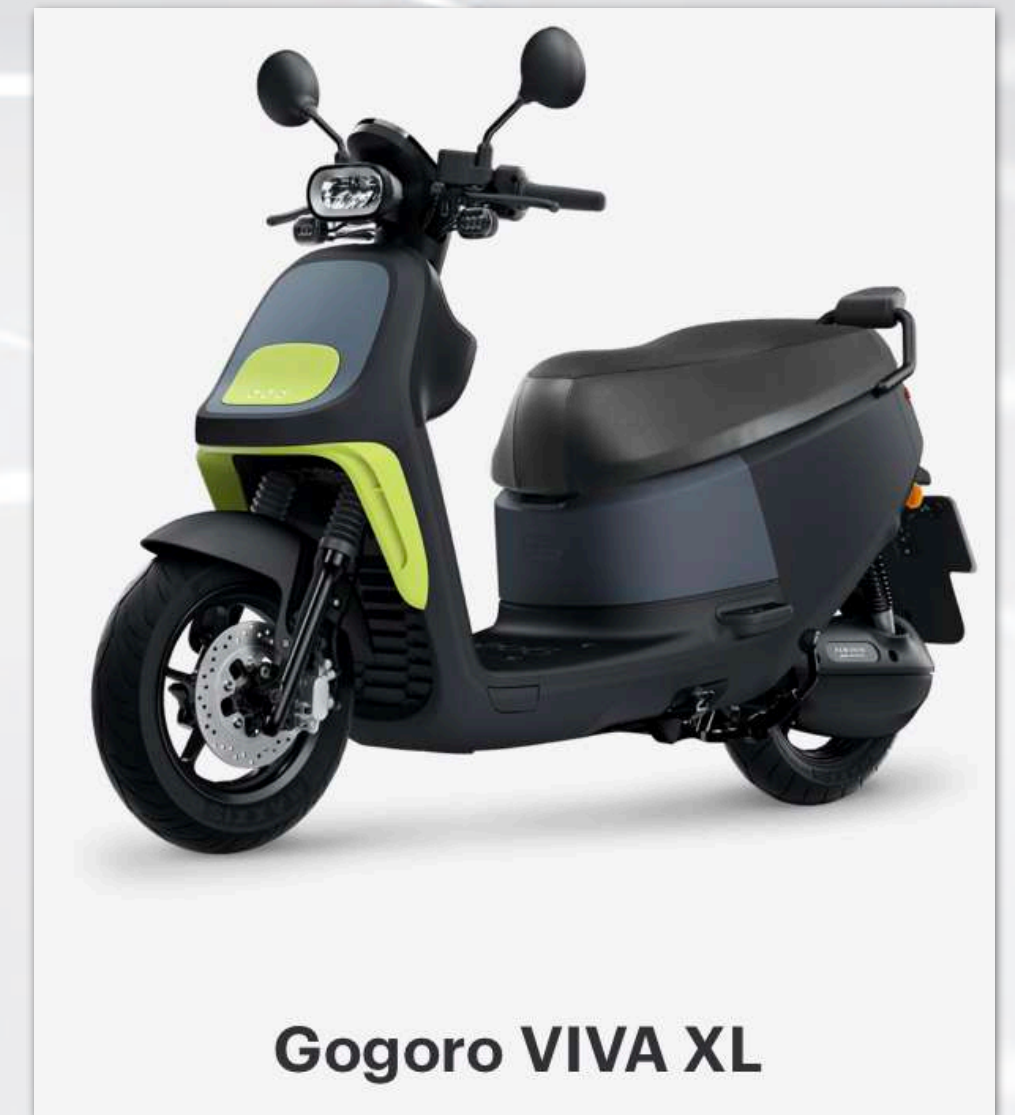
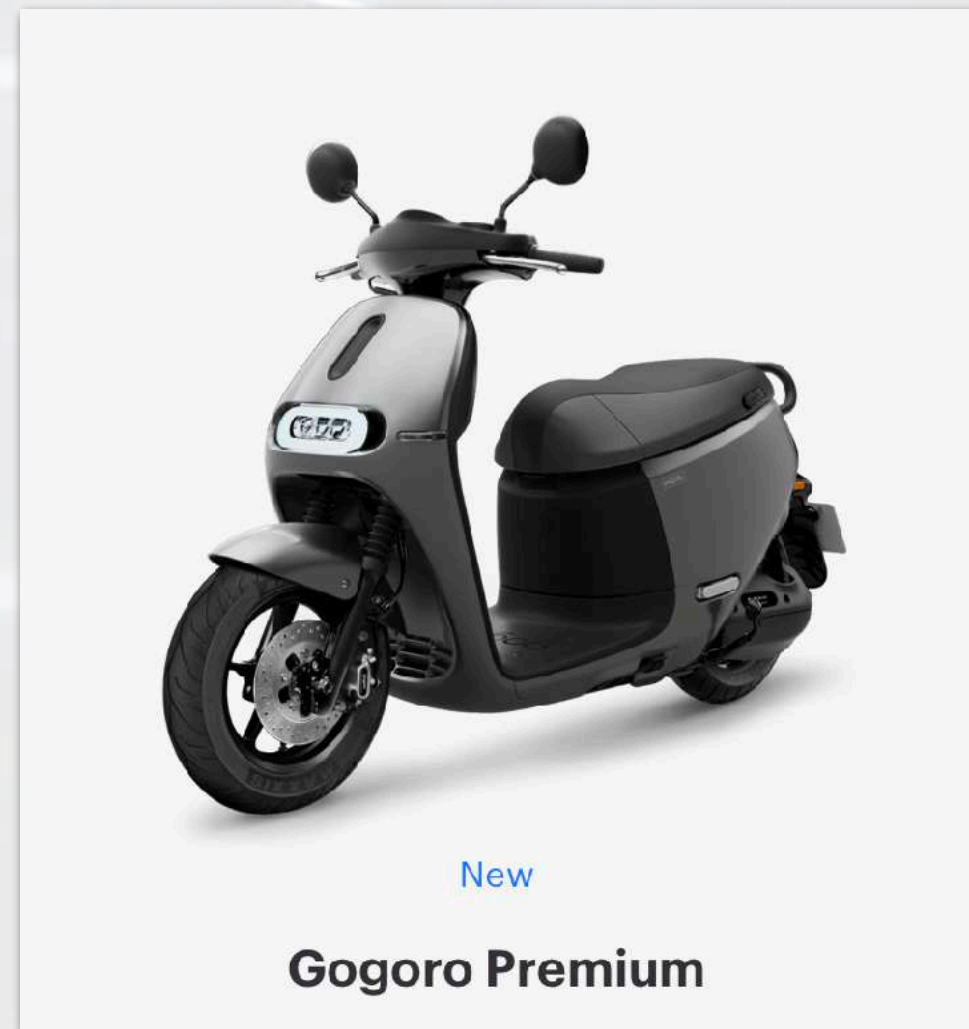
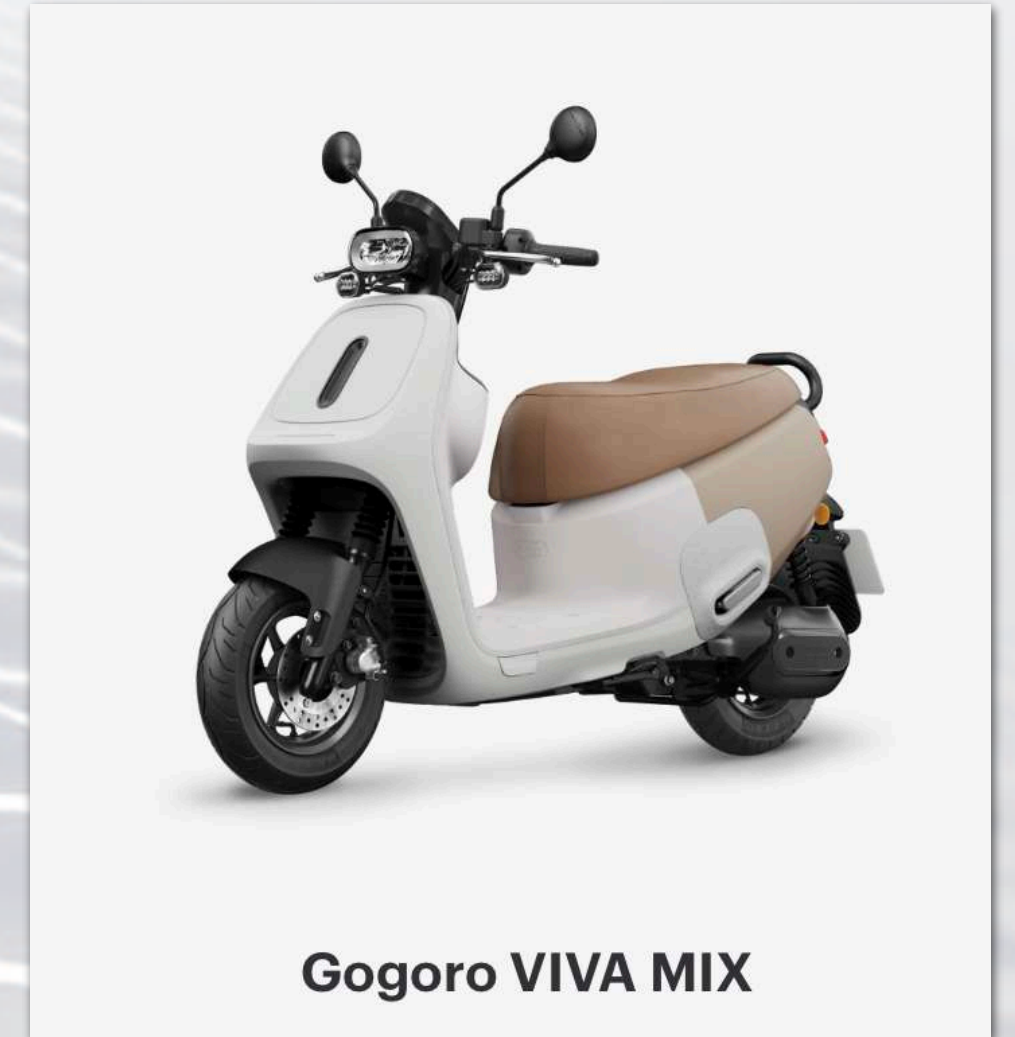
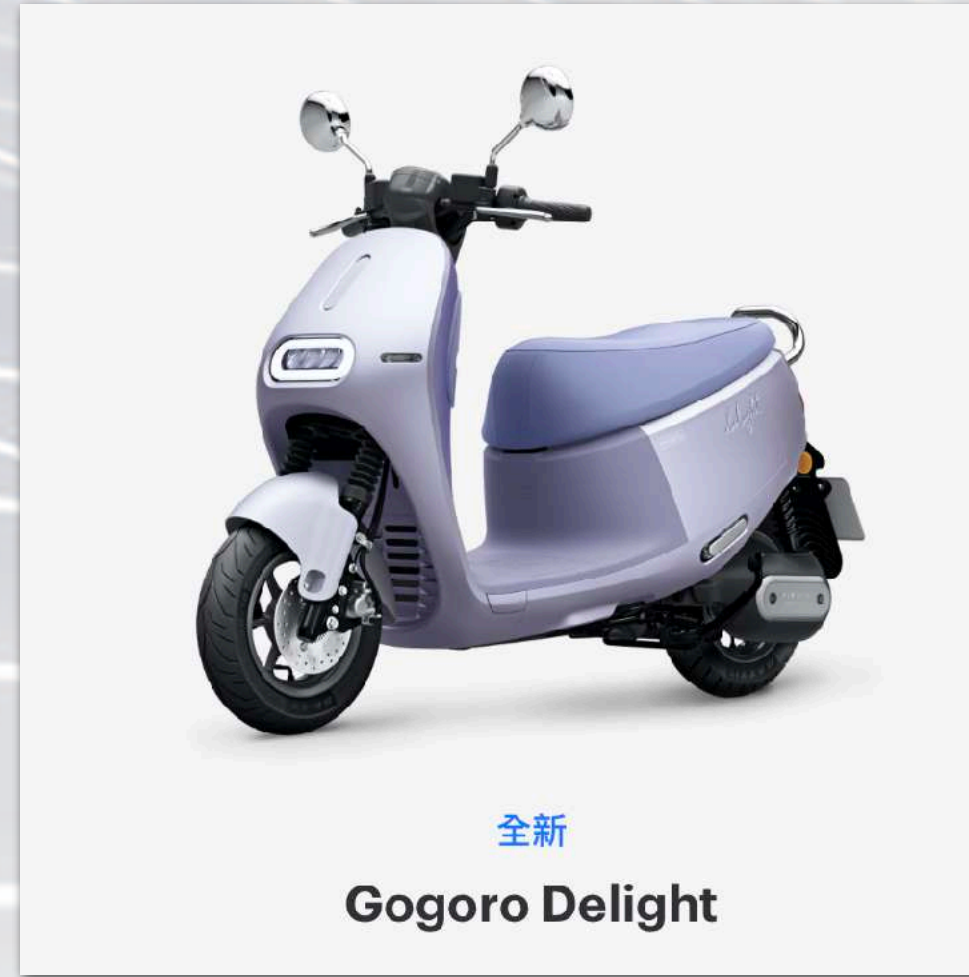


バッテリー式フル電動ラフテレーンクレーン「EVOLT eGR-250N」

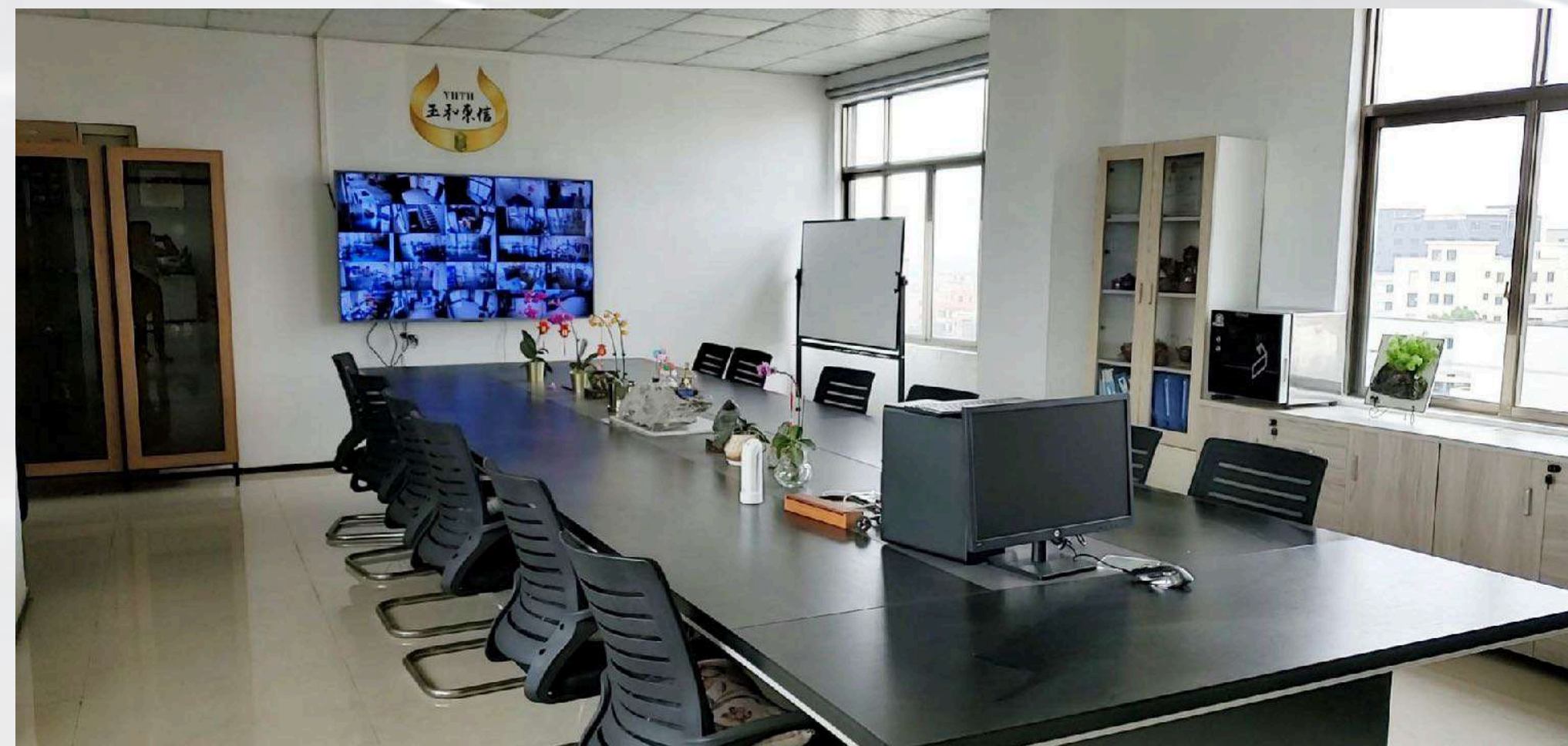
タダノは12月6日、世界初となる最大吊上げ荷重25t吊りのバッテリー式フル電動ラフテレーンクレーン「EVOLT eGR-250N」を2023年12月8日より発売すると発



gogoro













For all models, we test the samples in our laboratory before starting production.



Thermal Shock Test Machine



Vibration Testing



Microscope



Oven



Temperature & Humidity Test Chamber



Salt Spray Chamber



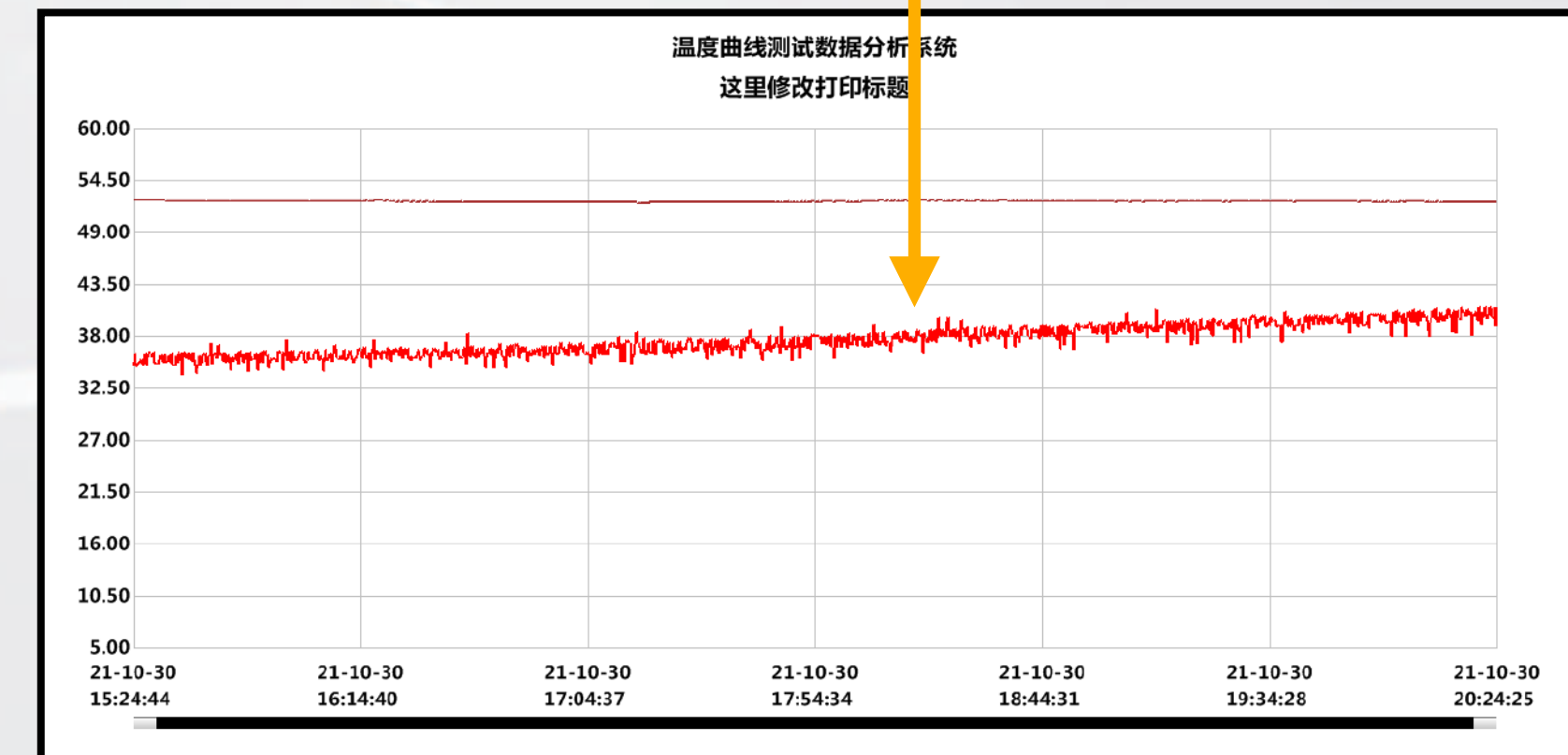
2.5D Measurement



Setting testing conditions



Testing data output



Programmable PCB

- ✓ Soft start
- ✓ Can be variable speed with PWM/CAN/0-5V
- ✓ Can be customized
- ✓ Can be external for high temperature environment

3 Phase Brushless Motor

- ✓ Quiet
- ✓ Long lifespan
- ✓ Requires less maintenance
- ✓ High efficiency and good power factor
- ✓ More reliable than 2 phase motor
- ✓ Can work with variable speed PCB



Centrifugal pump

- ✓ Durable design
- ✓ Smooth flow
- ✓ Small size, space saving
- ✓ Easy for maintenance





✓ Reliability proven

✓ QC Data digitalized

✓ Development capability

✓ Introduced digitalized traceability documents in 3rd season of 2022.

✓ Application versatility.
Can be used for any kind of cooling and heating¹ system.
Ex. EV, ICE car, agriculture, machine, heavy industries...

✓ Can be customized⁴

✓ Can work with water² or coolant³

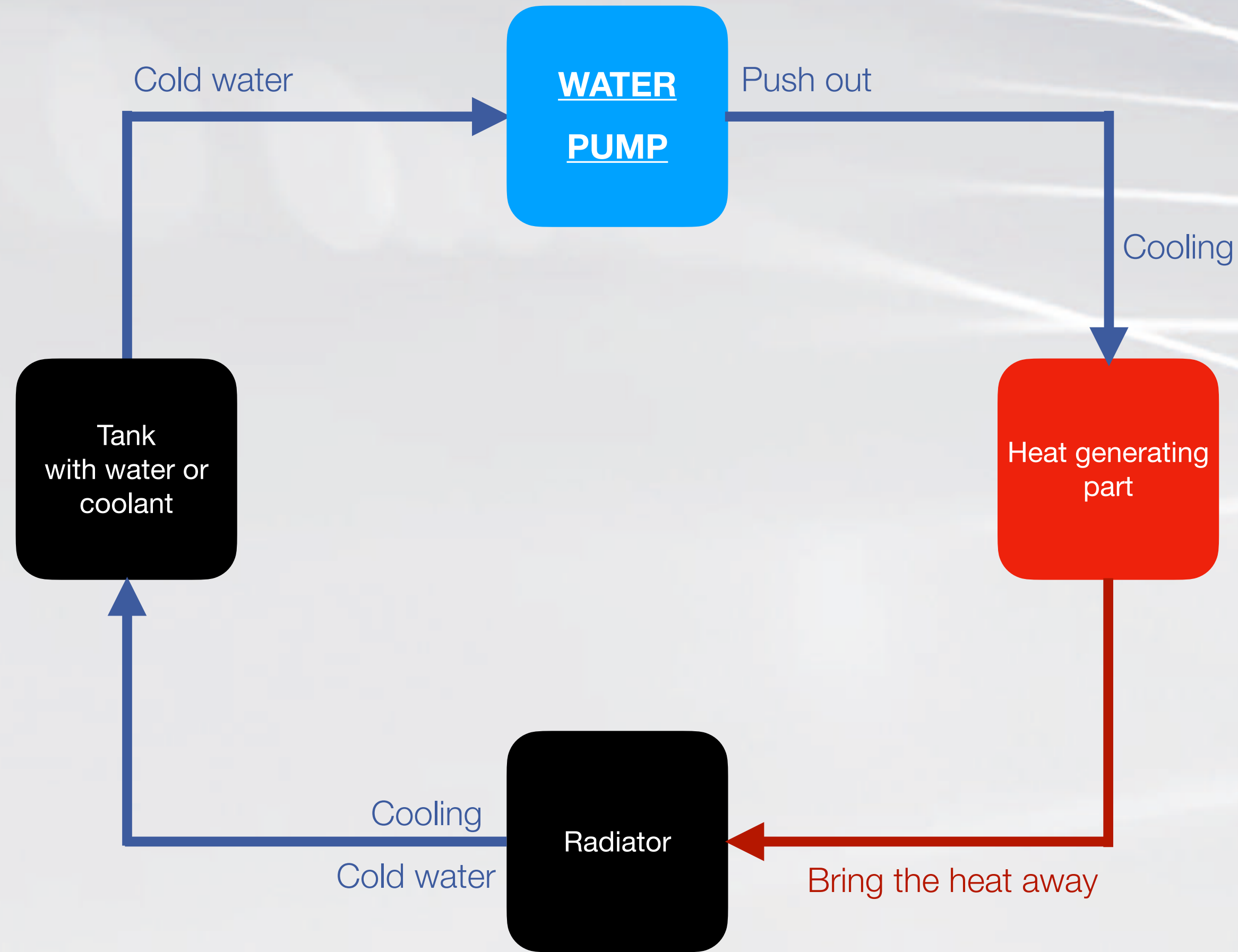
✓ Against water jets (IP65) or Submersible (IP68)

✓ Pumps are made in our own factory from motor winding

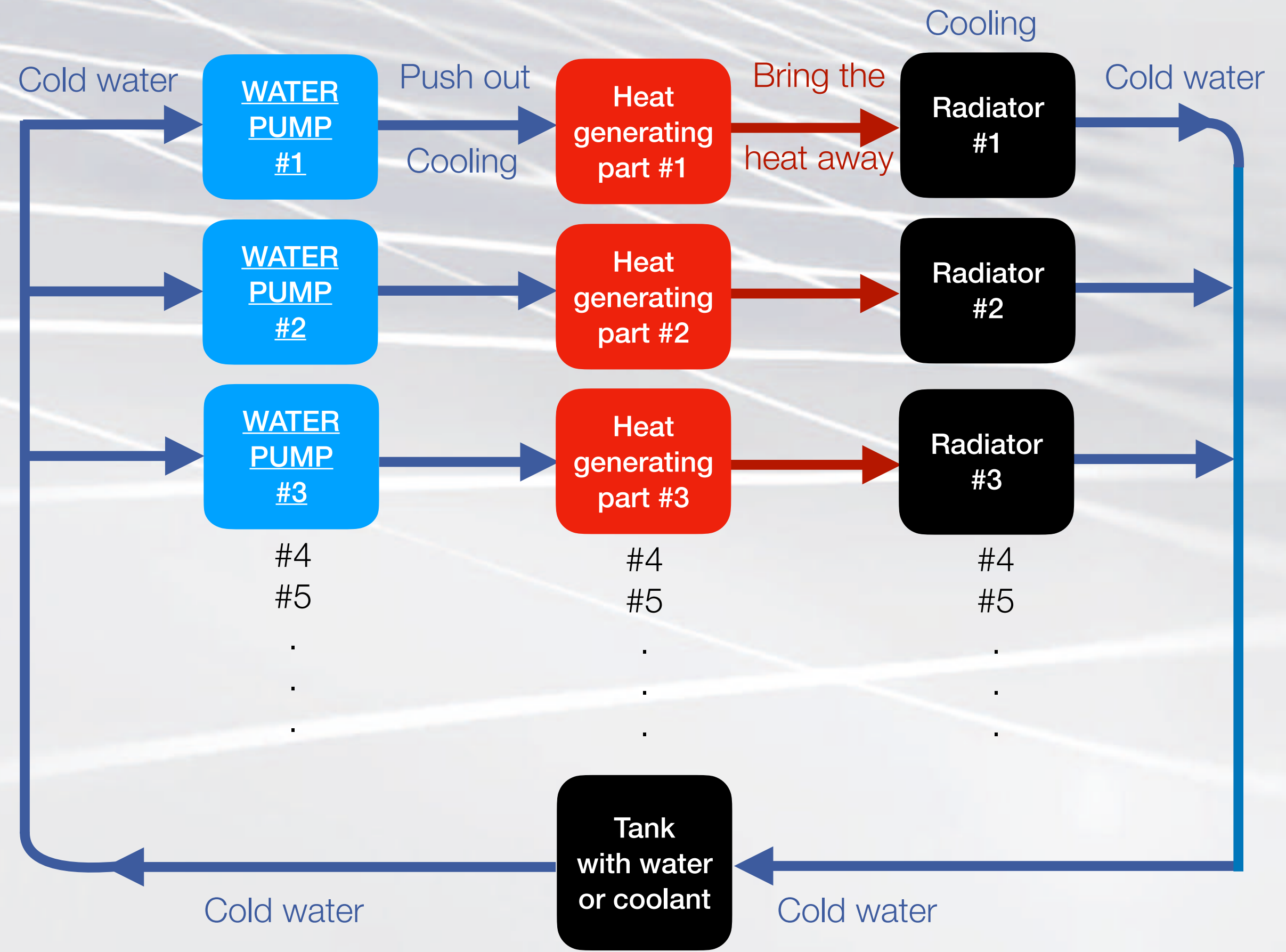
✓ Compact size and ranks high in energy efficiency compared to other pumps by competitors

1.For heating system, please check max. temperature with us. For some cases, we have to replace parts for high temperature application.
2.Should be distilled. Please check with us if you like to use with sea water or lake water.
3.PH 4-10, Viscosity $\leq 5\text{mPa}\cdot\text{s}$ @25°C
4. $\pm 10\%$ ~20% of specifications

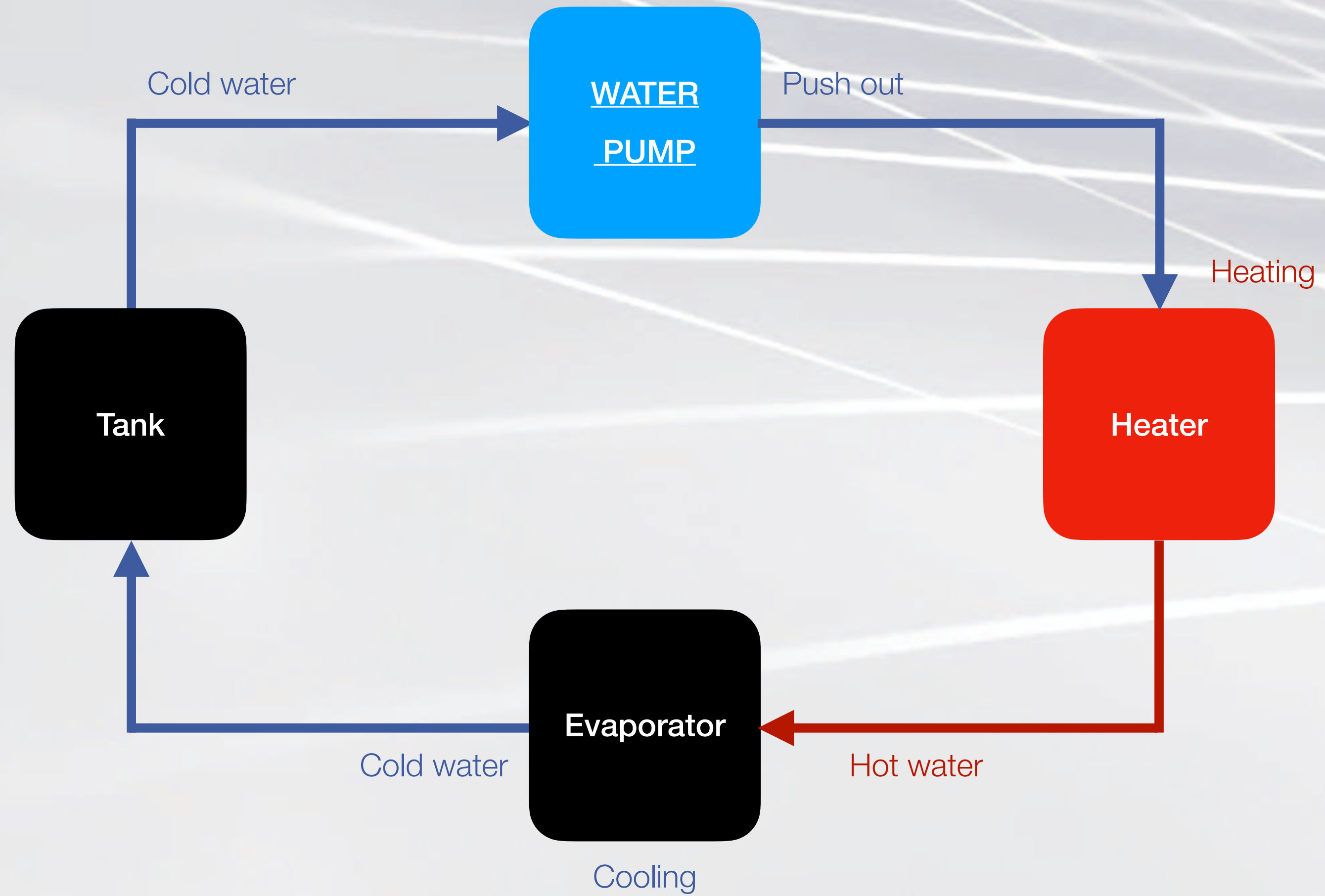
✓ Cooling for Single Part



✓ Cooling for Multi Parts



✓ Heating for Single Part



Electric Water Pump

*2023 New Model

➔ For Cooling and Heating System

➔ 3 Phase Brushless Motor

➔ Centrifugal Pump

➔ Soft Start

WEV-140505E

- ✓ Single Speed / Variable Speed
- ✓ Water Proof Level:
Pump IP68 / Controller IP65
- ✓ EMC: ECE R10(Rev.06)



WEV-140505E-23Z

- ✓ Single Speed / Variable Speed
- ✓ Water Proof Level:
Pump IP68 / Controller IP65



Model #	WEV-140505E		WEV-140505E-23Z
Voltage	DC 12 V	DC 14 V	DC 12 V
Voltage Range	DC 8V~16 V		
Withstanding Voltage*	DC 18V		
Current	1.30A ± 10%	1.25A ± 10%	1.30A ± 10%
Max. Power	15.60W ± 10%	17.50W ± 10%	15.60W ± 10%
Flow Rate	480LPH (8.0LPM)		900LPH (15.0LPM)
Pressure	5M(0.5 bar)		2.8M (0.28 bar)
Inlet Diameter	11.0 mm		19.0mm
Outlet Diameter	11.0 mm		19.0mm
Water Temperature	- 30 ~ 105 °C		
Ambient Temperature	- 30 ~ 85 °C		
Storage Temperature	- 30 ~ 85 °C		
Dimensions	93.0 x 64.2 x 52.0 mm (pum) 67.5 x 46.0 x 20.0 mm (controller)		92.1x49.8x76.7 mm (pump) 67.5 x 46.0 x 20.0 mm (controller)
Weight	364g ± 10%		372g ± 10%
Pump Body Material	PA66 + 30% GF		
Noise Level	< 40 dB		
Single / Variable Speed	Single Speed / Variable Speed (PWM)		
Controller	External		
Fluids Type	Water / Coolant (pH 4-10)		

*Pump running in withstanding voltage or voltage exceeding range stated above is not recommended. It may cause pump failure.

Electric Water Pump

➔ For Cooling and Heating System

➔ 3 Phase Brushless Motor

➔ Centrifugal Pump

➔ Soft Start

WEV-140505G

- ✓ Single Speed
- ✓ Water Proof Level: IP65
- ✓ Vibration test: 10G
- ✓ EMC: ECE R10(Rev.06)



WEV-140505I

- ✓ Single Speed
- ✓ Water Proof Level: IP65



WEV-140505G-23Z

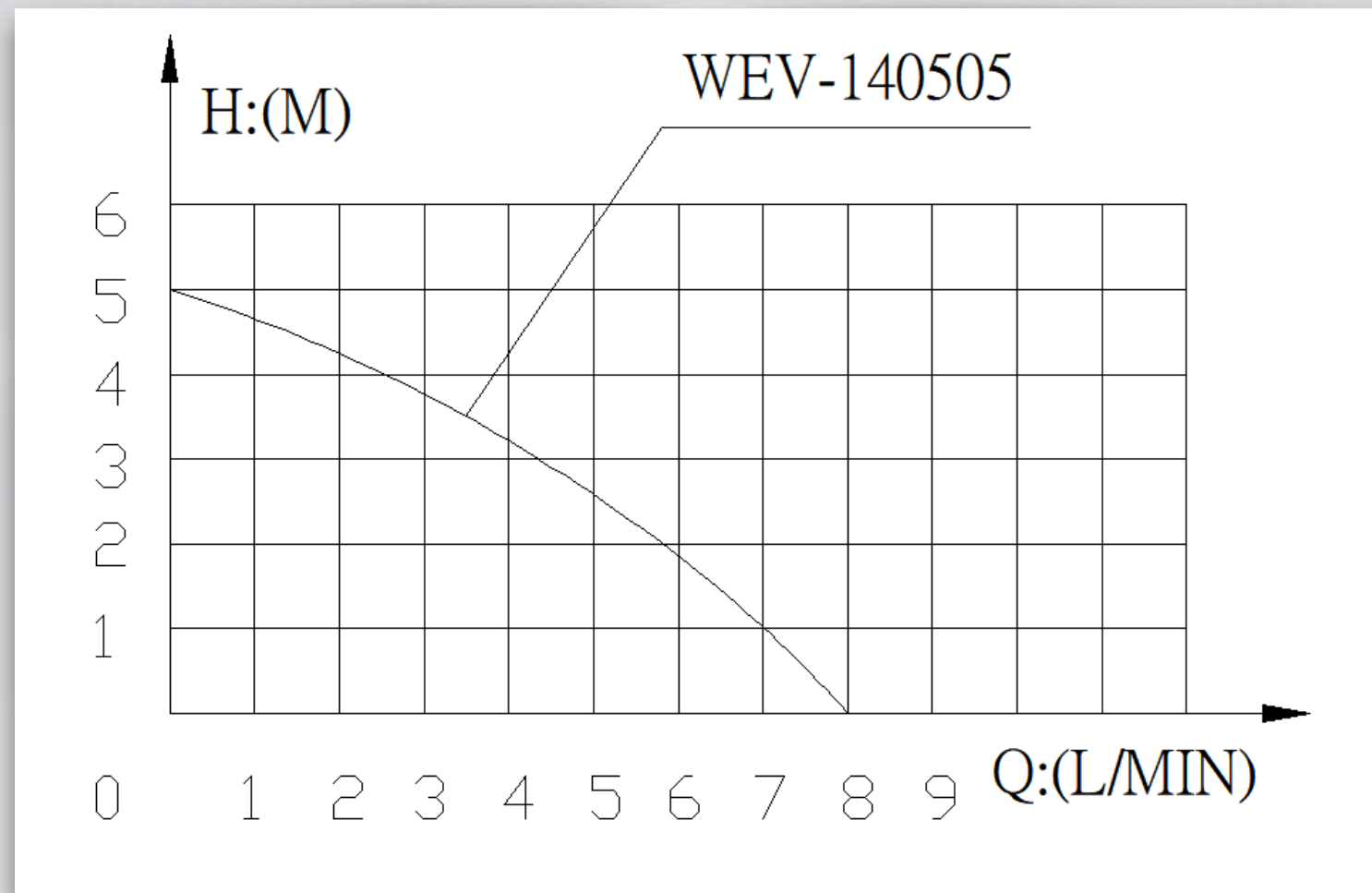
- ✓ Single Speed
- ✓ Water Proof Level: IP65



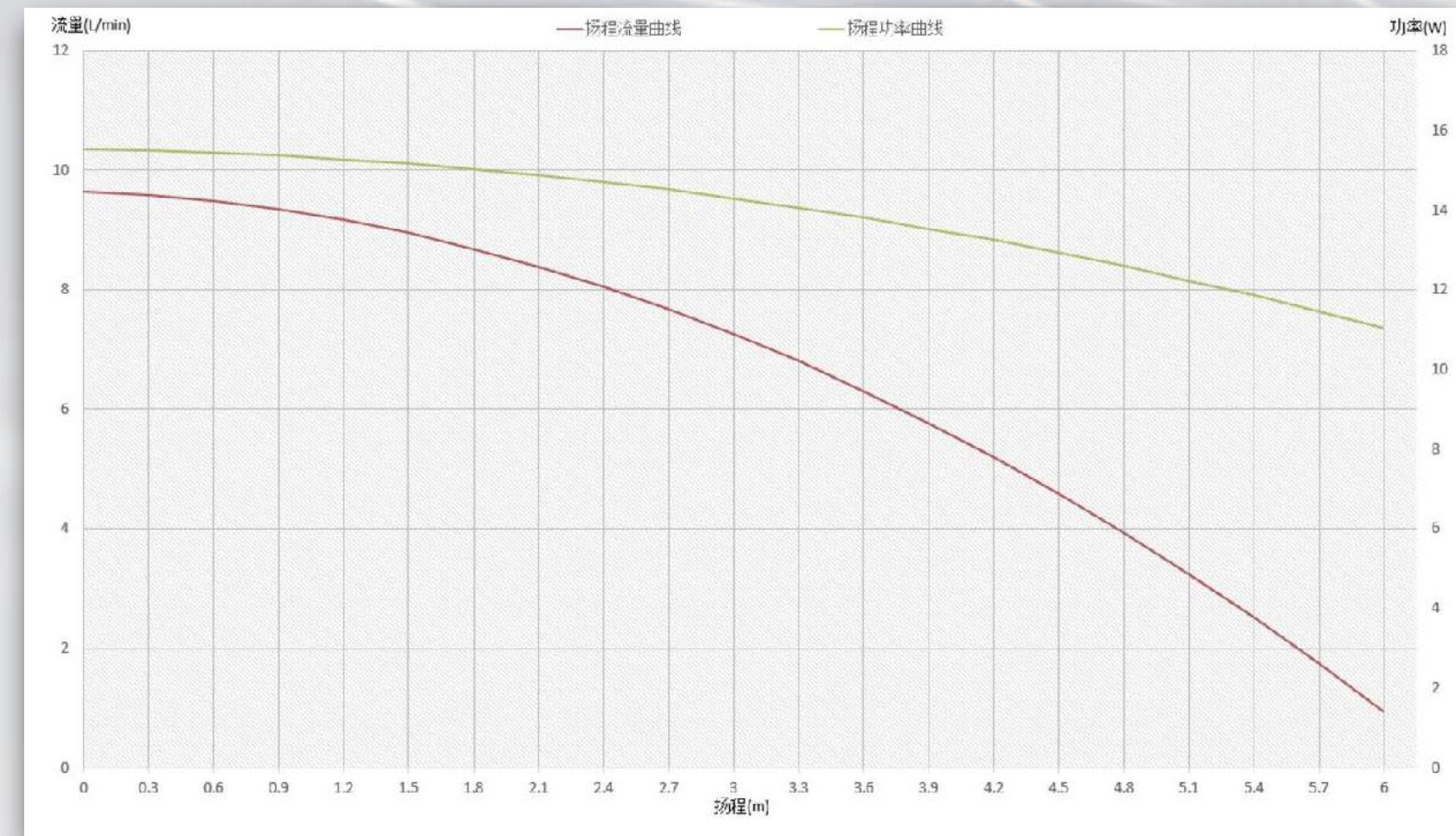
Model #	WEV-140505G		WEV-140505I	WEV-140505G-23Z
Voltage	DC 12 V	DC 14 V	DC 12 V	DC12V
Voltage Range	DC 8V~16 V			
Withstanding Voltage*	DC 18V			
Current	1.30A ± 10%	1.25A ± 10%	1.35A ± 10%	1.30A ± 10%
Max. Power	15.60W ± 10%	17.50W ± 10%	16.20W ± 10%	15.60W ± 10%
Flow Rate	480LPH (8.0LPM)		570LPH (9.5LPM)	900LPH(15.0LPM)
Pressure	5.0M(0.5 bar)		6.5M(0.65 bar)	2.8M(0.28 bar)
Inlet Diameter	11.0 mm			19.0mm
Outlet Diameter	11.0 mm			19.0mm
Water Temperature	-30 ~ 95 °C			
Ambient Temperature	- 30 ~ 85 °C			
Storage Temperature	- 30 ~ 85 °C			
Dimensions	93.0 x 64.2 x 60.1 mm			92.1x74.1x60.1mm
Weight	302g ± 10%			310g ± 10%
Pump Body Material	PA66 + 30% GF			
Noise Level	< 40 dB			
Single / Variable Speed	Single Speed			
Controller	Built-In			
Fluids Type	Water / Coolant (pH 4-10)			

*Pump running in withstanding voltage or voltage exceeding range stated above is not recommended. It may cause pump failure.

WEV-140505E / WEV-140505G

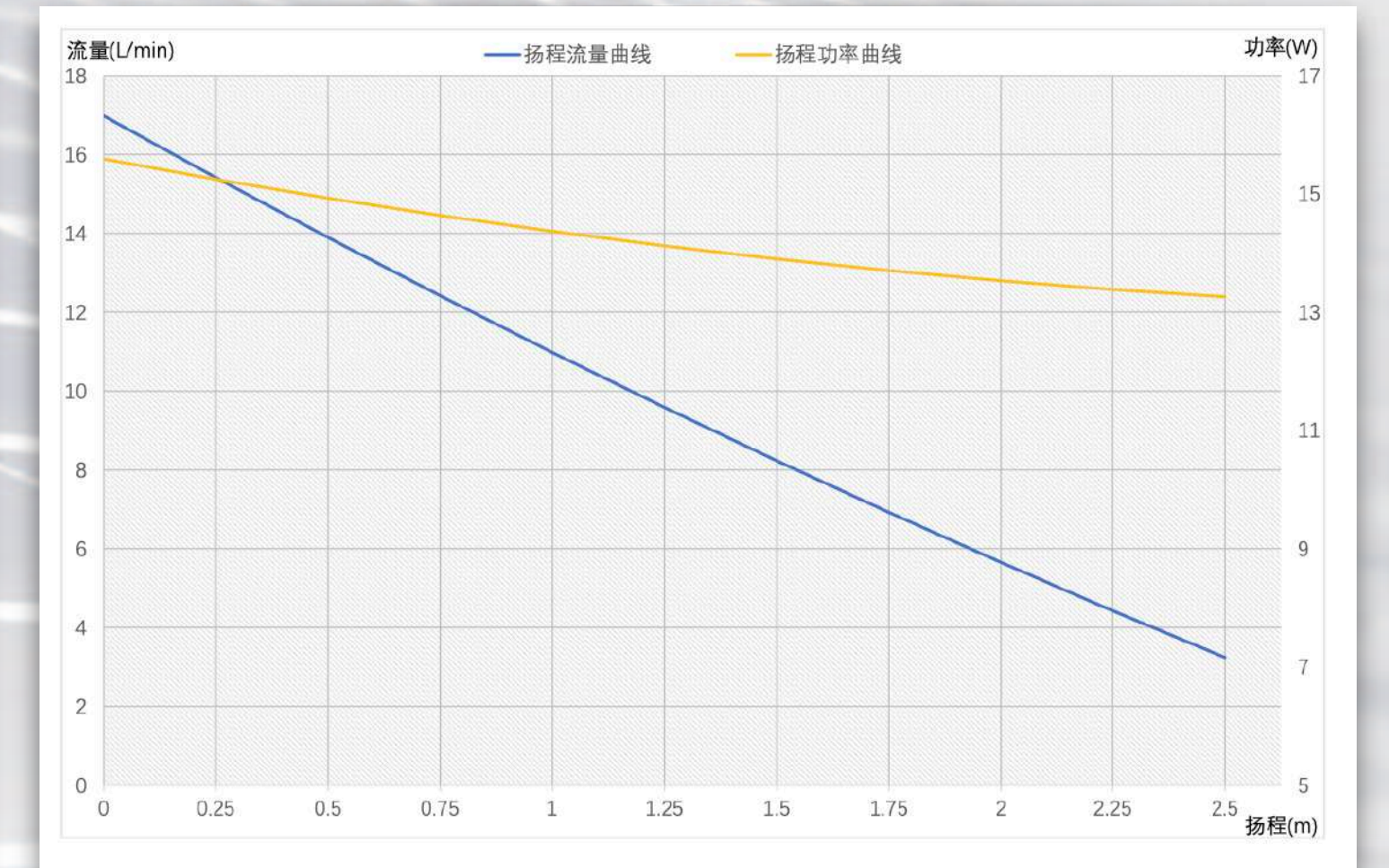


WEV-140505I



— Pressure / Flow Curve
— Pressure / Power Curve

WEV-140505E-23Z / WEV-140505G-23Z



— Pressure / Flow Curve
— Pressure / Power Curve

Electric Water Pump

*2023 New Model

*2023 New Model

*2023 New Model

*2023 New Model

➔ For Cooling and Heating System

➔ 3 Phase Brushless Motor

➔ Centrifugal Pump

➔ Soft Start

WEV-240505G

- ✓ Single Speed
- ✓ Water Proof Level: IP65
- ✓ 2023 NEW MODEL



WEV-240505E

- ✓ Single Speed / Variable Speed
- ✓ Water Proof Level: Pump IP68 / Controller IP65
- ✓ 2023 NEW MODEL



WEV-240505E-23Z

- ✓ Single Speed / Variable Speed
- ✓ Water Proof Level: Pump IP68 / Controller IP65
- ✓ 2023 NEW MODEL



WEV-240505G-23Z

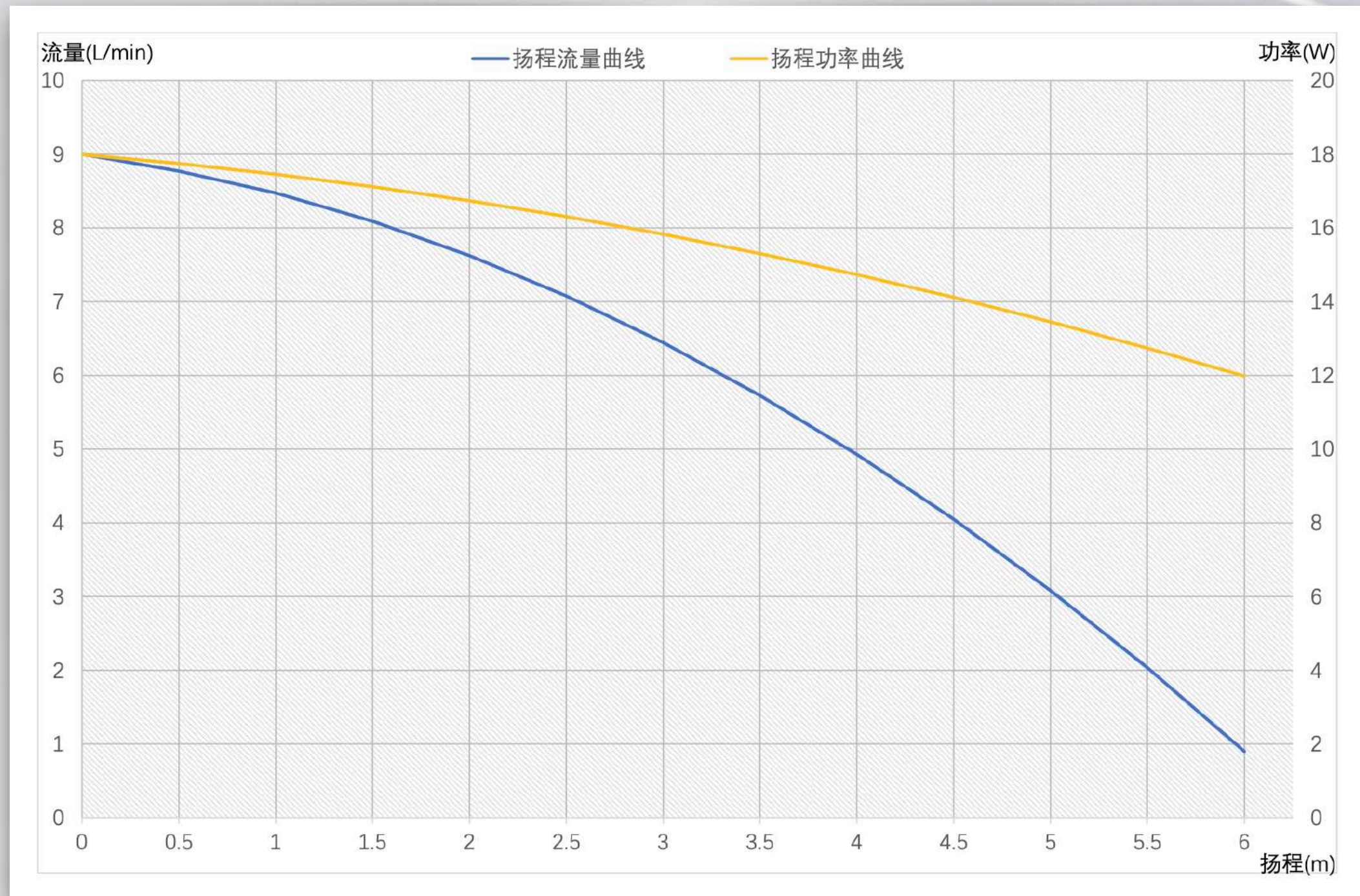
- ✓ Single Speed
- ✓ Water Proof Level: IP65
- ✓ 2023 NEW MODEL



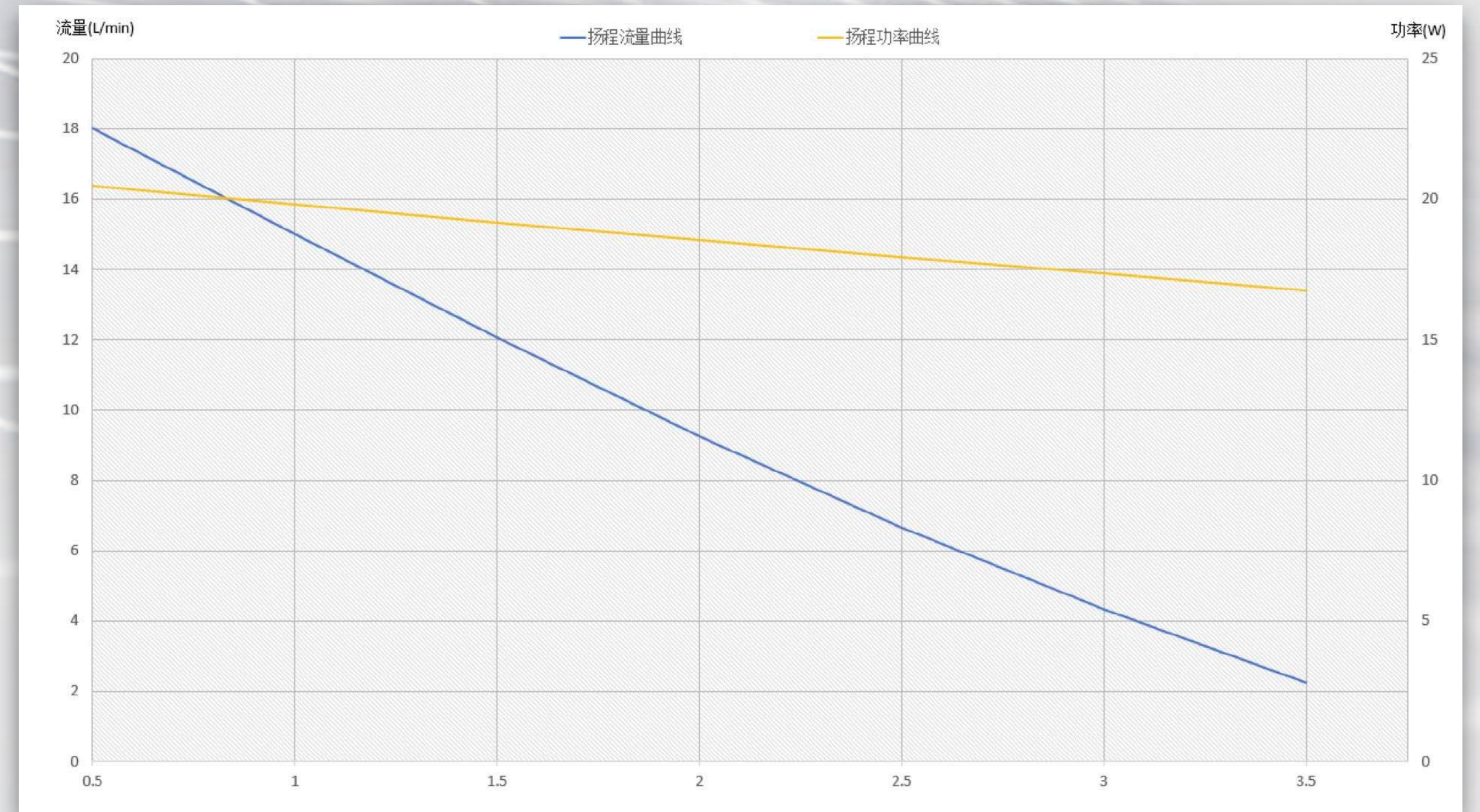
Model #	WEV-240505G	WEV-240505E	WEV-240505G-23Z	WEV-240505E-23Z
Voltage	DC 24 V			
Voltage Range	DC 18-28V			
Withstanding Voltage*	DC 36V			
Current	0.75A ± 10%		0.84A ± 10%	
Max. Power	18.00W ± 10%		20.16W ± 10%	
Flow Rate	540LPH (9.0LPM)		1080LPH (18.0LPM)	
Pressure	6.0M (0.60bar)		3.8M (0.38bar)	
Inlet Diameter	11.0 mm		19.0 mm	
Outlet Diameter	11.0 mm		19.0 mm	
Water Temperature	-30 ~ 95 °C	- 30 ~ 105 °C	-30 ~ 95 °C	- 30 ~ 105 °C
Ambient Temperature	- 30 ~ 85 °C			
Storage Temperature	- 30 ~ 85 °C			
Dimensions	93.0 x 64.2 x 60.1 mm	93.0 x 64.2 x 52.0 mm(pump) 67.5 x 46.0 x 20.0 mm (controller)	92.1x74.1x60.1mm	92.1x49.8x76.7 mm (pump) 67.5 x 46.0 x 20.0 mm (controller)
Weight	302g ± 10%	364g ± 10%	310g ± 10%	372g ± 10%
Pump Body Material	PA66 + 30% GF			
Noise Level	< 40 dB			
Single / Variable Speed	Single Speed	Single Speed / Variable Speed	Single Speed	Single Speed / Variable Speed
Controller	Built-In	External	Built-In	External
Fluids Type	Water / Coolant (pH 4-10)			

*Pump running in withstanding voltage or voltage exceeding range stated above is not recommended. It may cause pump failure.

WEV-240505E / WEV-240505G



WEV-240505E-23A / WEV-240505G-23Z



— Pressure / Flow Curve
— Pressure / Power Curve

Electric Water Pump

Specifications

- For Cooling and Heating System
- 3 Phase Brushless Motor
- Centrifugal Pump
- Soft Start
- Single Speed / Variable Speed
- Water Proof Level: IP67



11.0mm w/ bracket



11.0mm w/o bracket



DN15 w/ bracket



DN15 w/o bracket



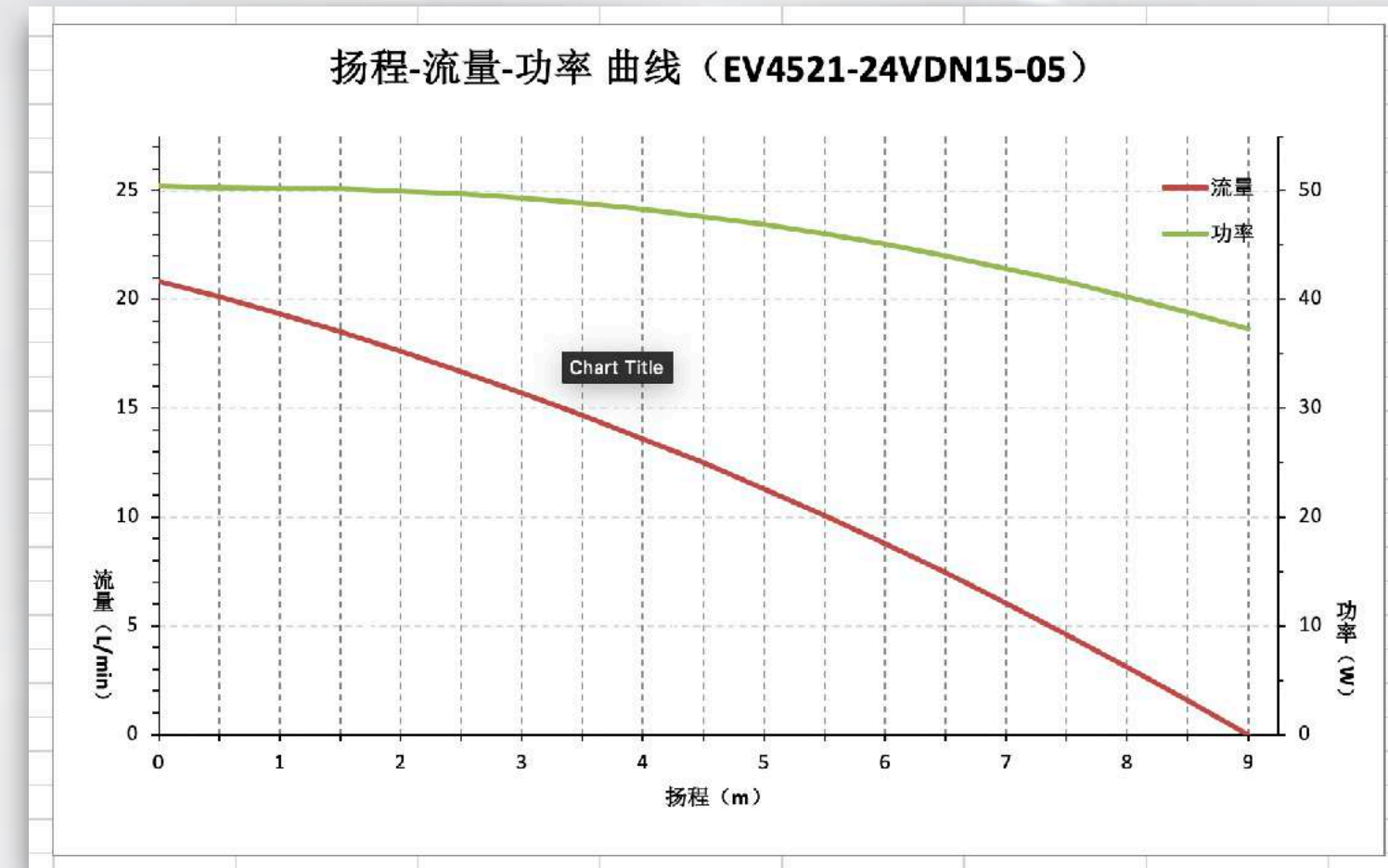
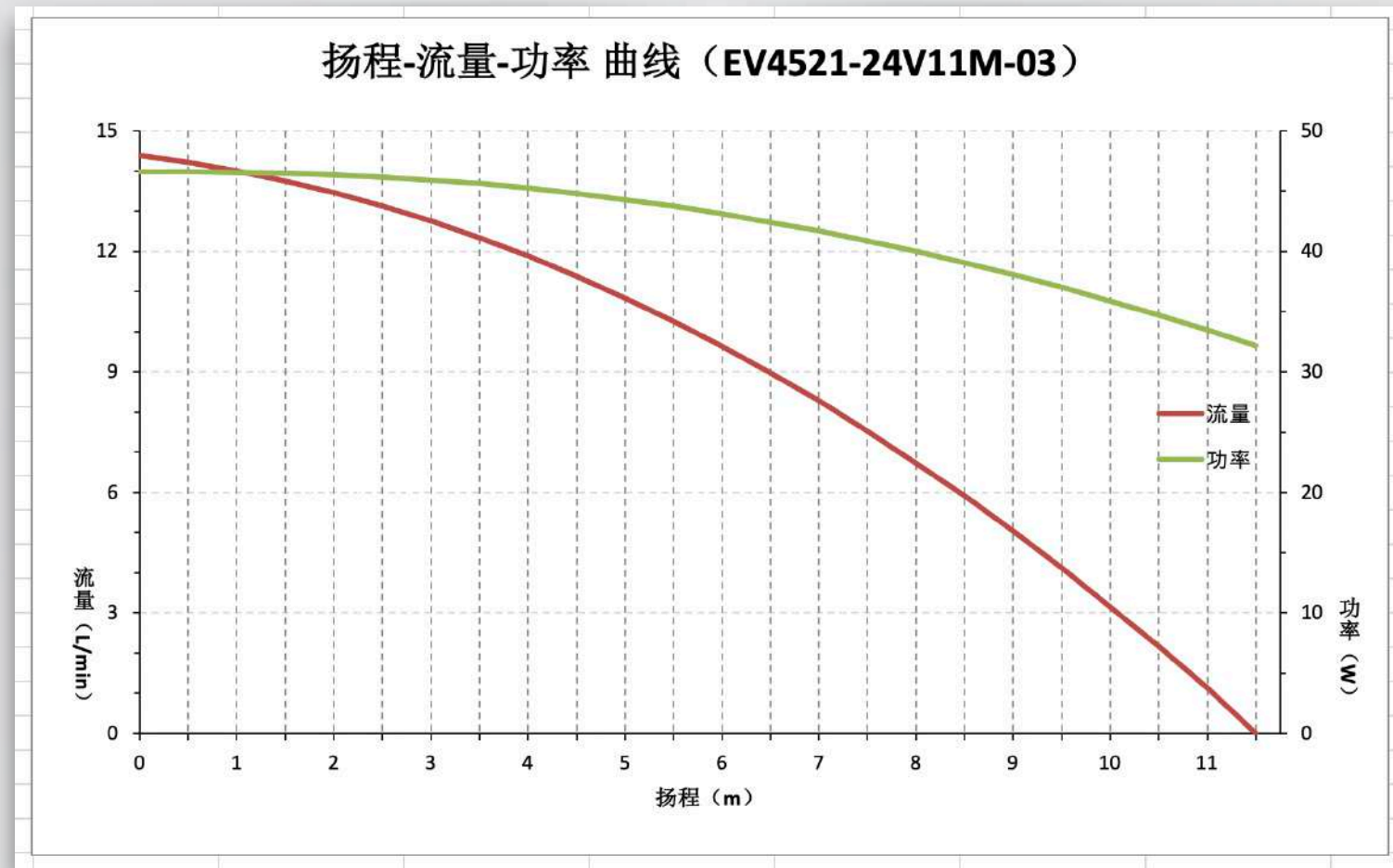
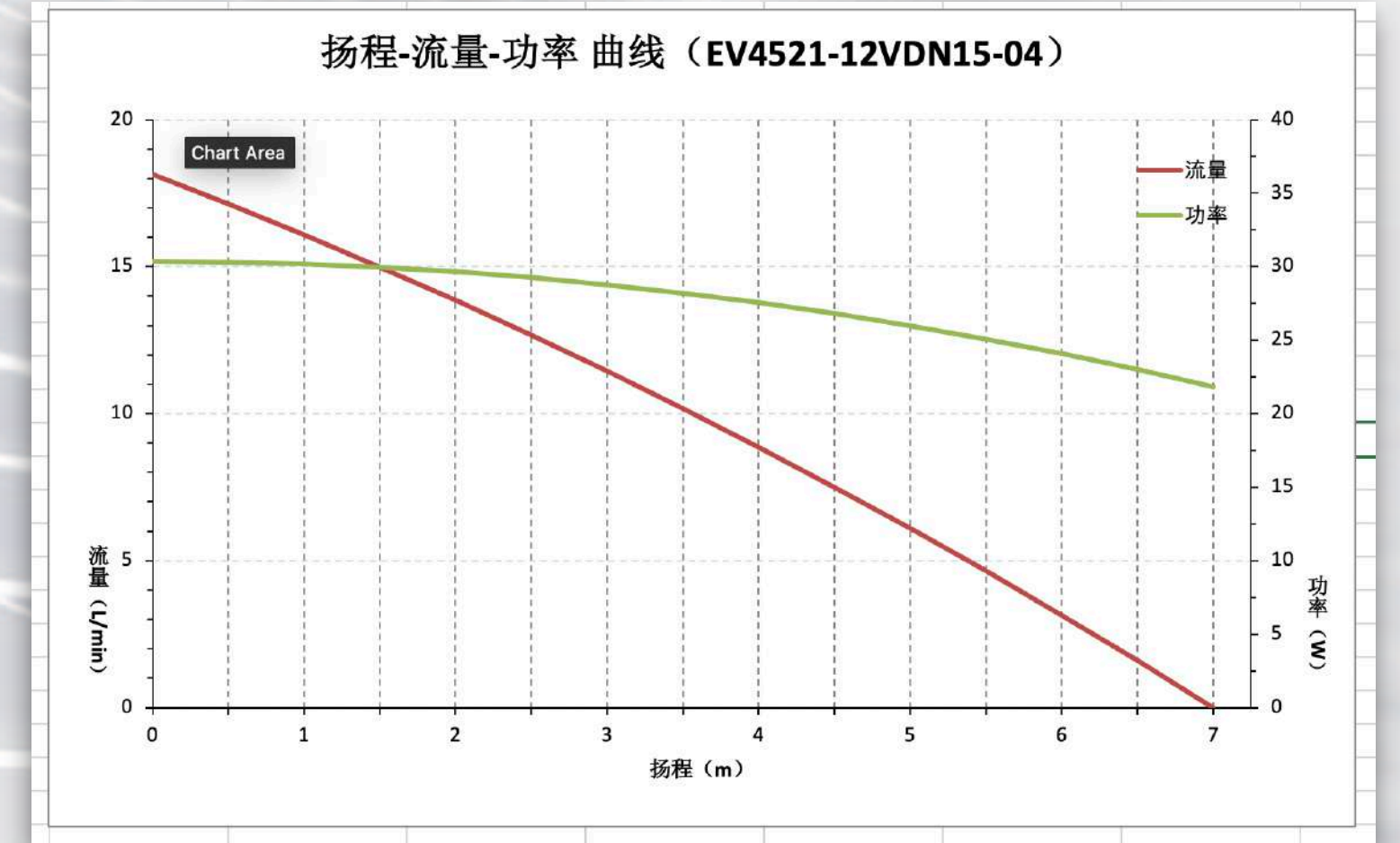
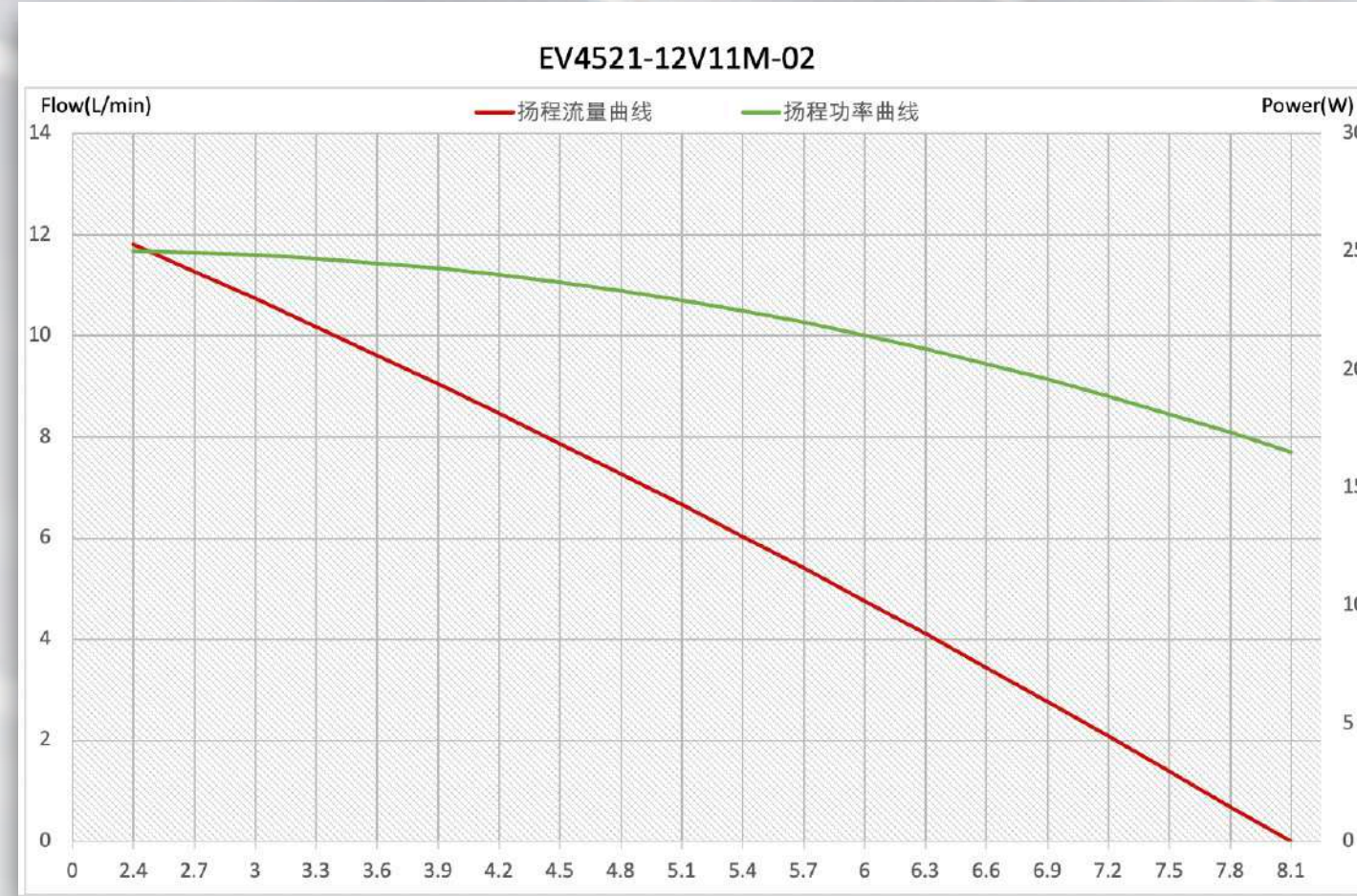
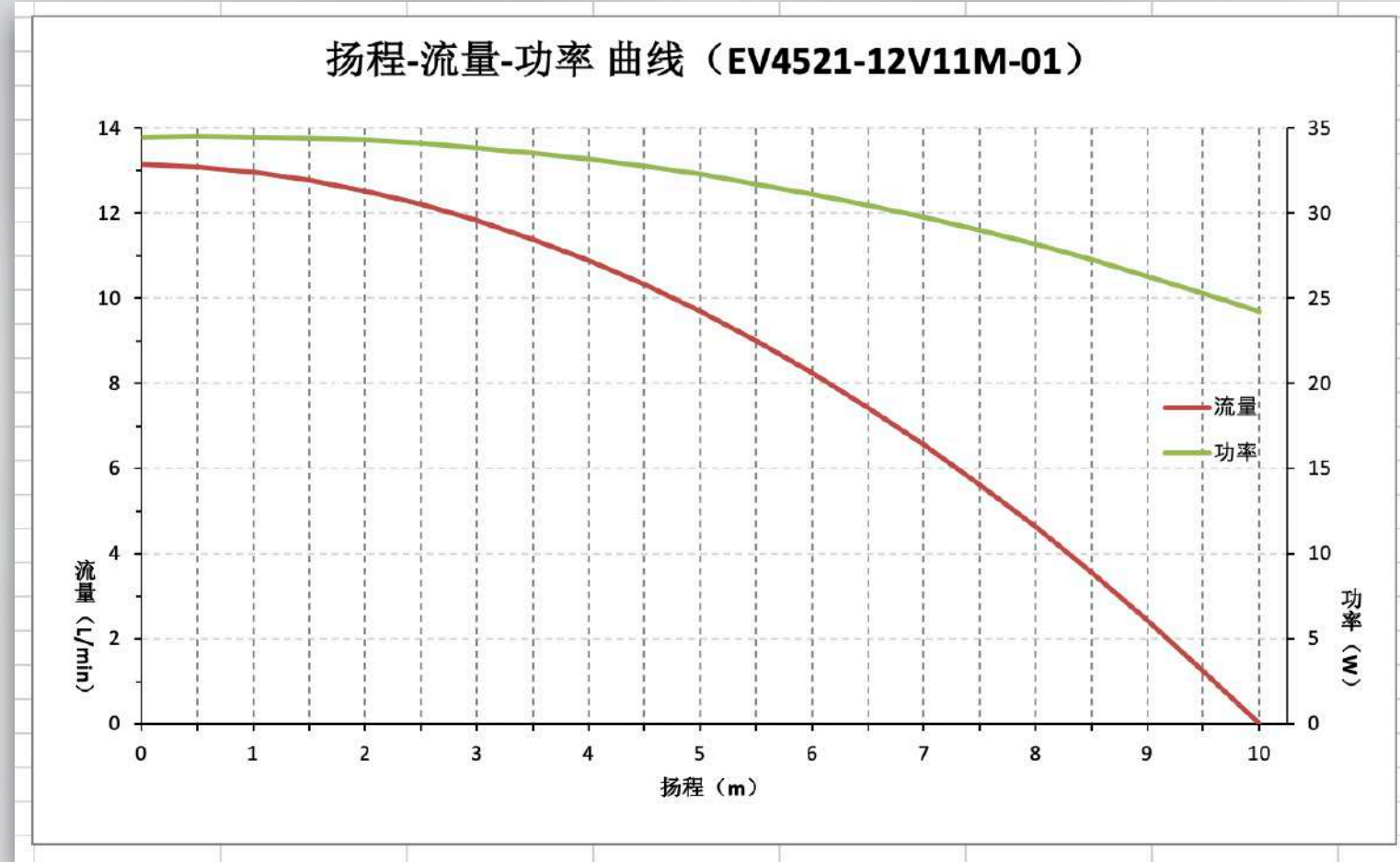
22.0mm w/ bracket



16.0mm w/ bracket

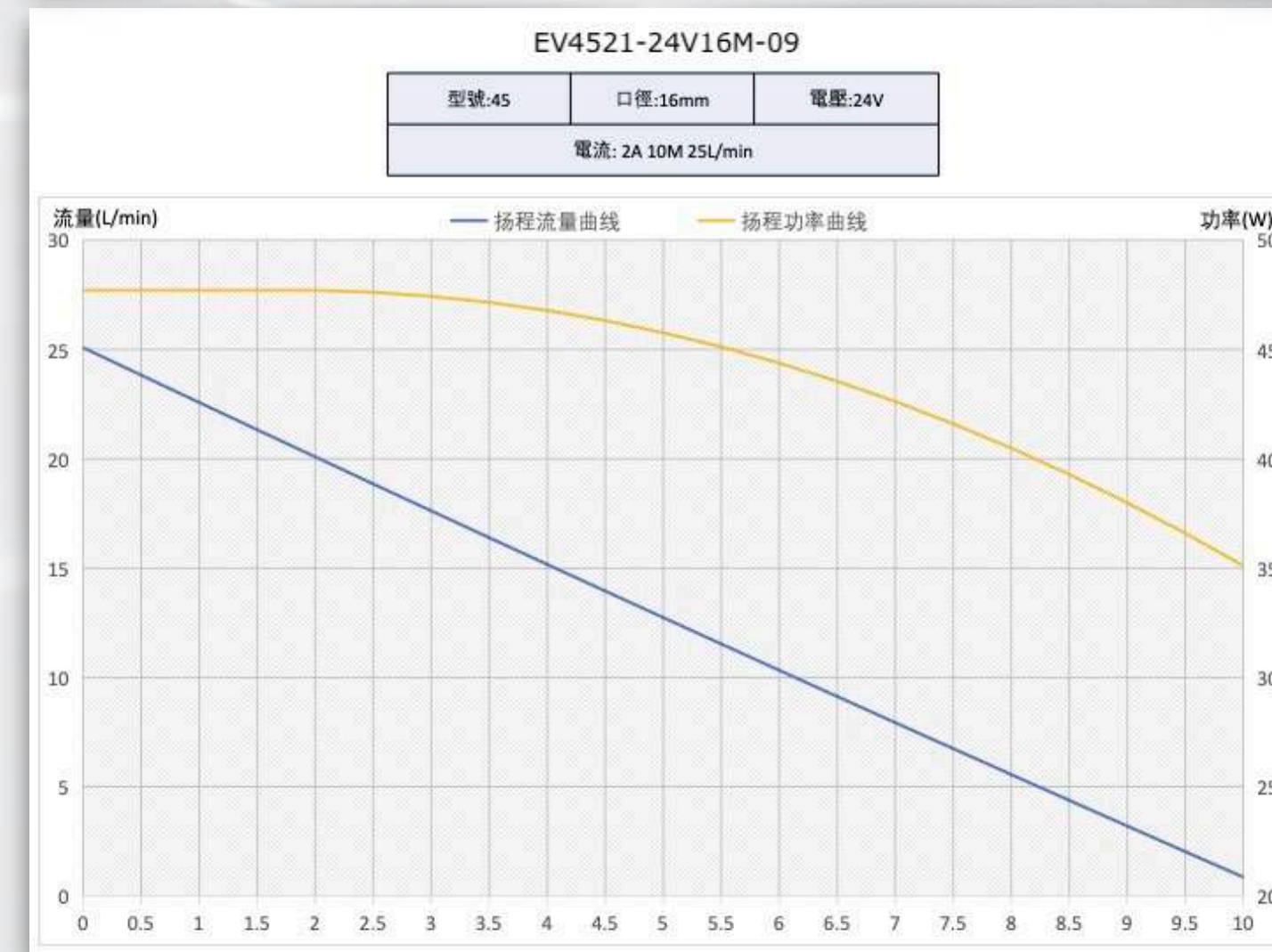
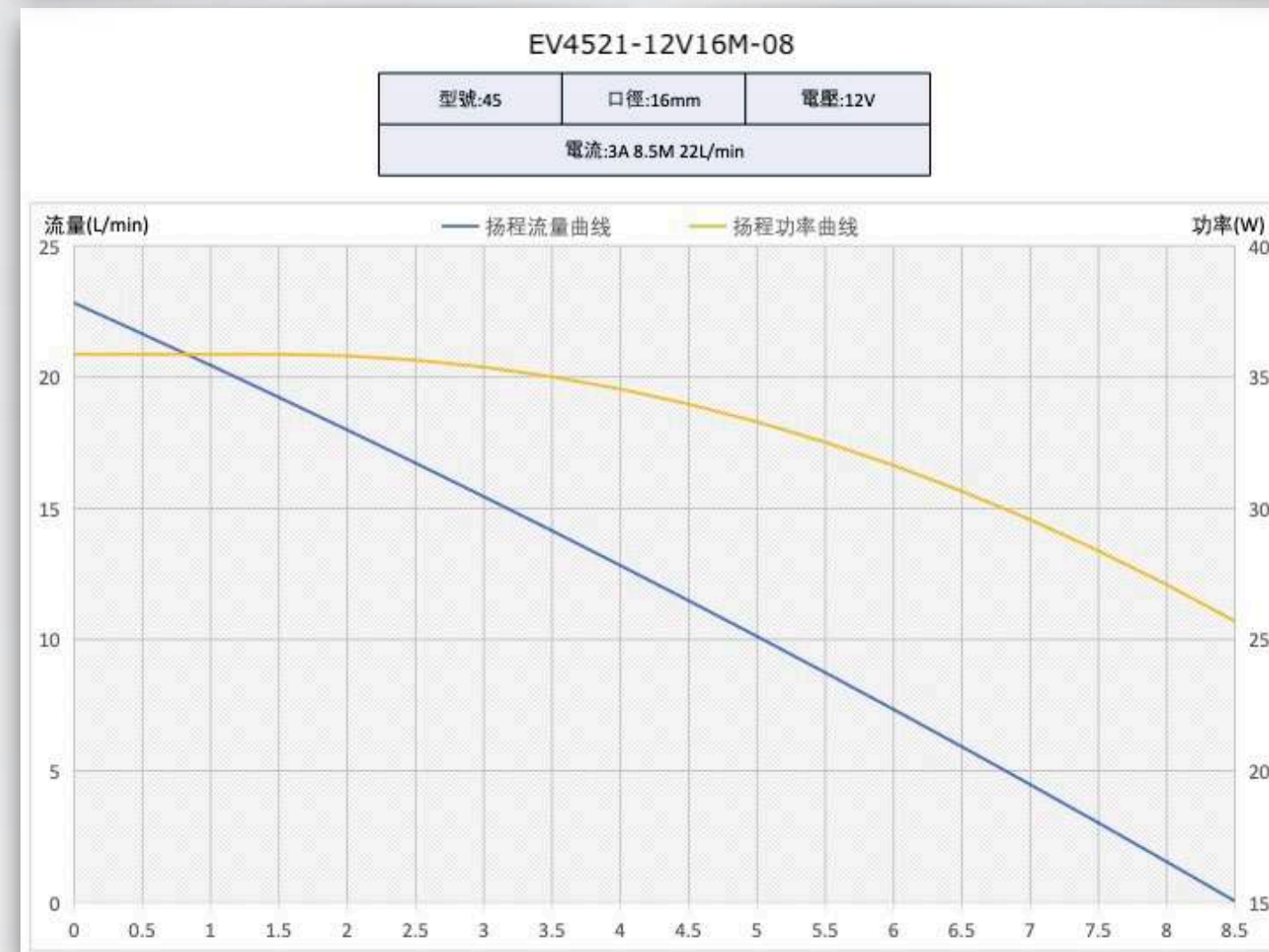
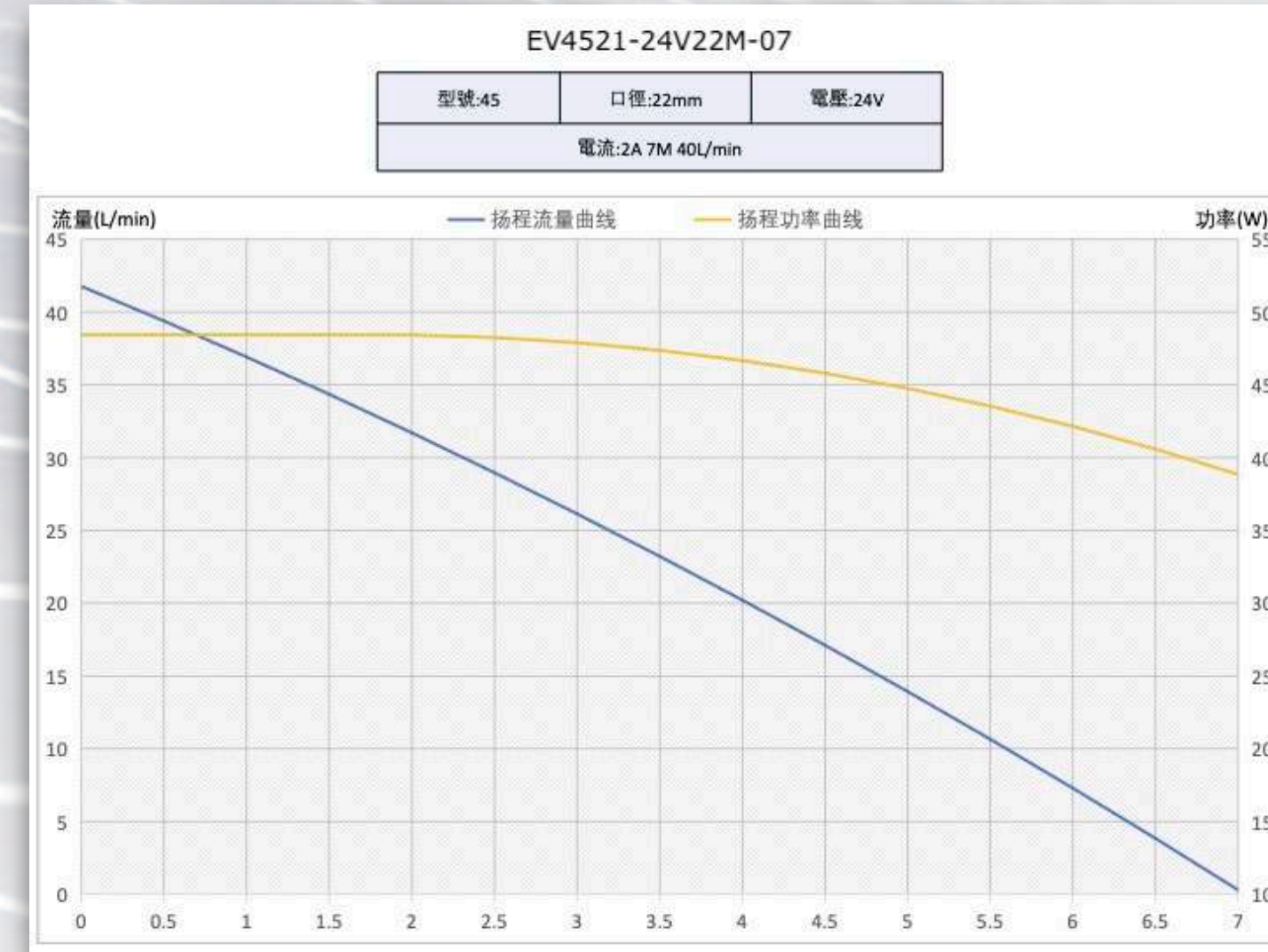
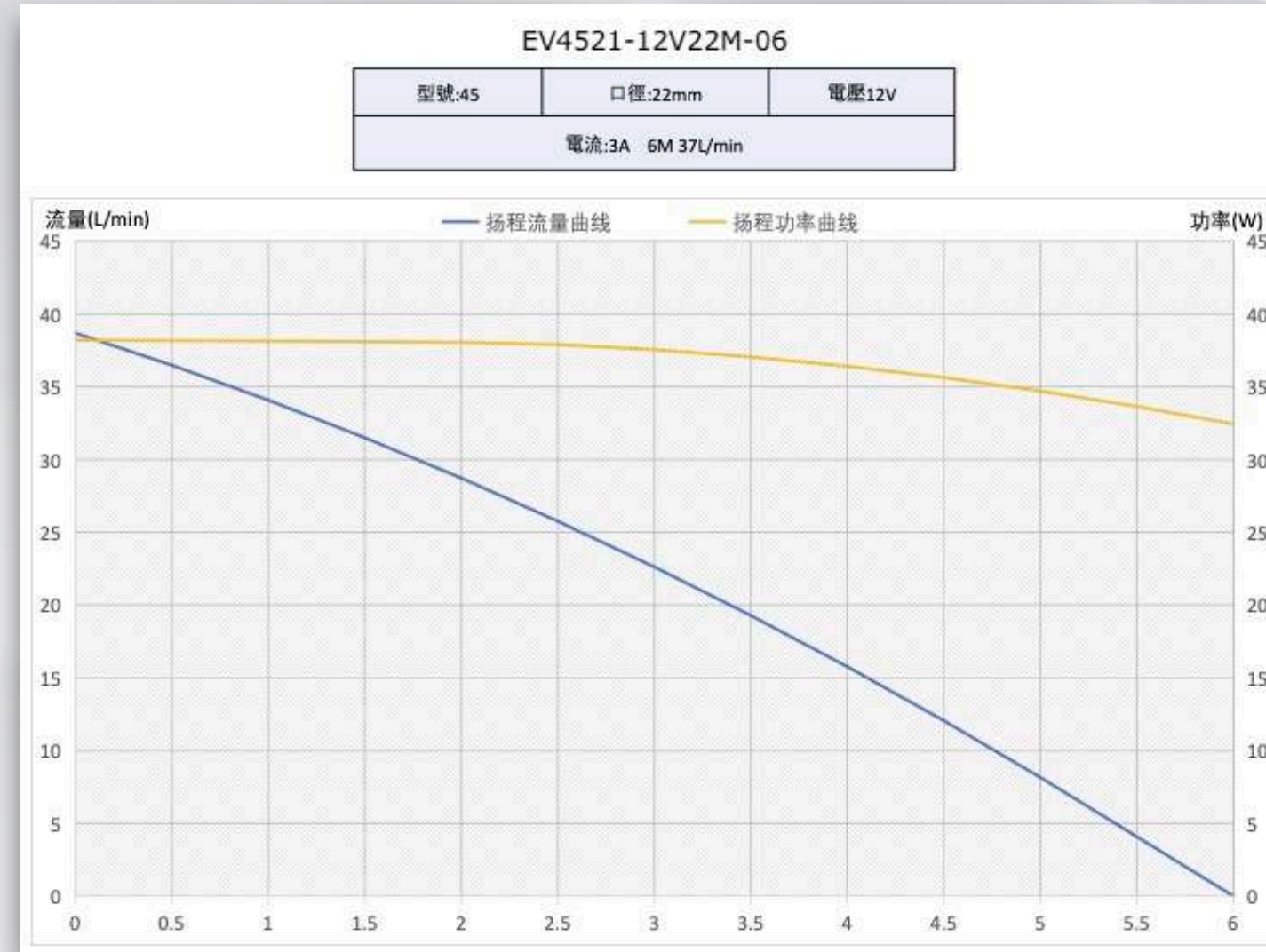
2 Phase / 3 Phase	Water Temperature	Ambient Temperature	Storage Temperature	Pump Body Material	Noise Level	Single / Variable Speed	Controller	Fluids Type
3 Phase	-30 ~ 105 °C	- 30 ~ 85 °C	- 30 ~ 85 °C	PA66 + 30% GF	< 40 dB	Single Speed / Variable Speed (PWM)	Built-In	Water / Coolant (pH 4-10)

#	Voltage	Current	Pressure	Flow Rate	Inlet/Outlet	Weight	Dimensions
EV4521-12V11M-01	12V	3.1A	10.0M (1.00bar)	13.0LPM (780LPH)	16.0mm/11.0mm	377g ± 10%	96.4x76.6x78.5 mm
EV4521-12V11M-02	12V	2.2A	7.6M (0.76bar)	11.8LPM (708LPH)			
EV4521-24V11M-03	24V	2.0A	11.5M (1.15bar)	14.0LPM (840LPH)			
EV4521-12VDN15-04	12V	2.5A	7.0M (0.70bar)	18.0LPM (1080LPH)	DN15	388g ± 10%	96.4x76.6x83.5 mm
EV4521-24VDN15-05	24V	2.1A	9.0M (0.90bar)	20.0LPM (1200LPH)			
↻ Updated EV4521-12V22M-06	12V	3.0A	6.0M (0.60bar)	37.0LPM (2220LPH)	22.0mm	400g ± 10%	101.8x76.6x84.7 mm
↻ Updated EV4521-24V22M-07	24V	2.0A	7.0M (0.70bar)	40.0LPM (2400LPH)			
★ New EV4521-12V16M-08	12V	3.0A	8.5M (0.85bar)	20.0LPM (1200LPH)	16.0mm	400g ± 10%	98.4 x 76.6 x 83.5 mm
★ New EV4521-24V16M-09	24V	2.0A	10.0M (1.00bar)	25.0LPM (1500LPH)			



— Pressure / Flow Curve
— Pressure / Power Curve

Electric Water Pump



— Pressure / Flow Curve
— Pressure / Power Curve

Electric Water Pump

- ➔ For Cooling and Heating System
- ➔ 3 Phase Brushless Motor
- ➔ Centrifugal Pump
- ➔ Soft Start
- ➔ Single Speed / Variable Speed
- ➔ Water Proof Level: IP67



22.0mm w/ bracket



22.0mm w/o bracket



DN15 w/ bracket



DN15 w/o bracket

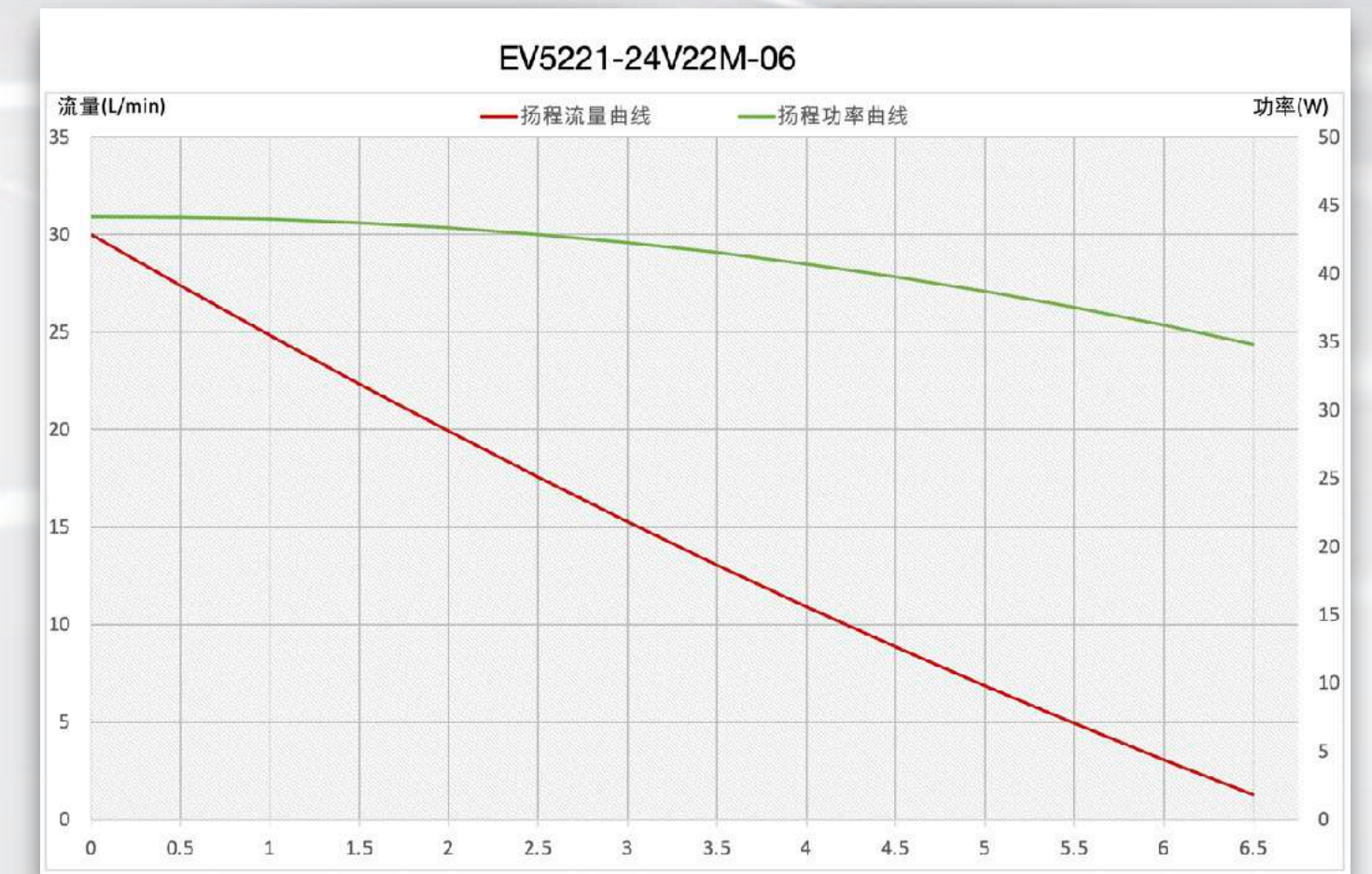
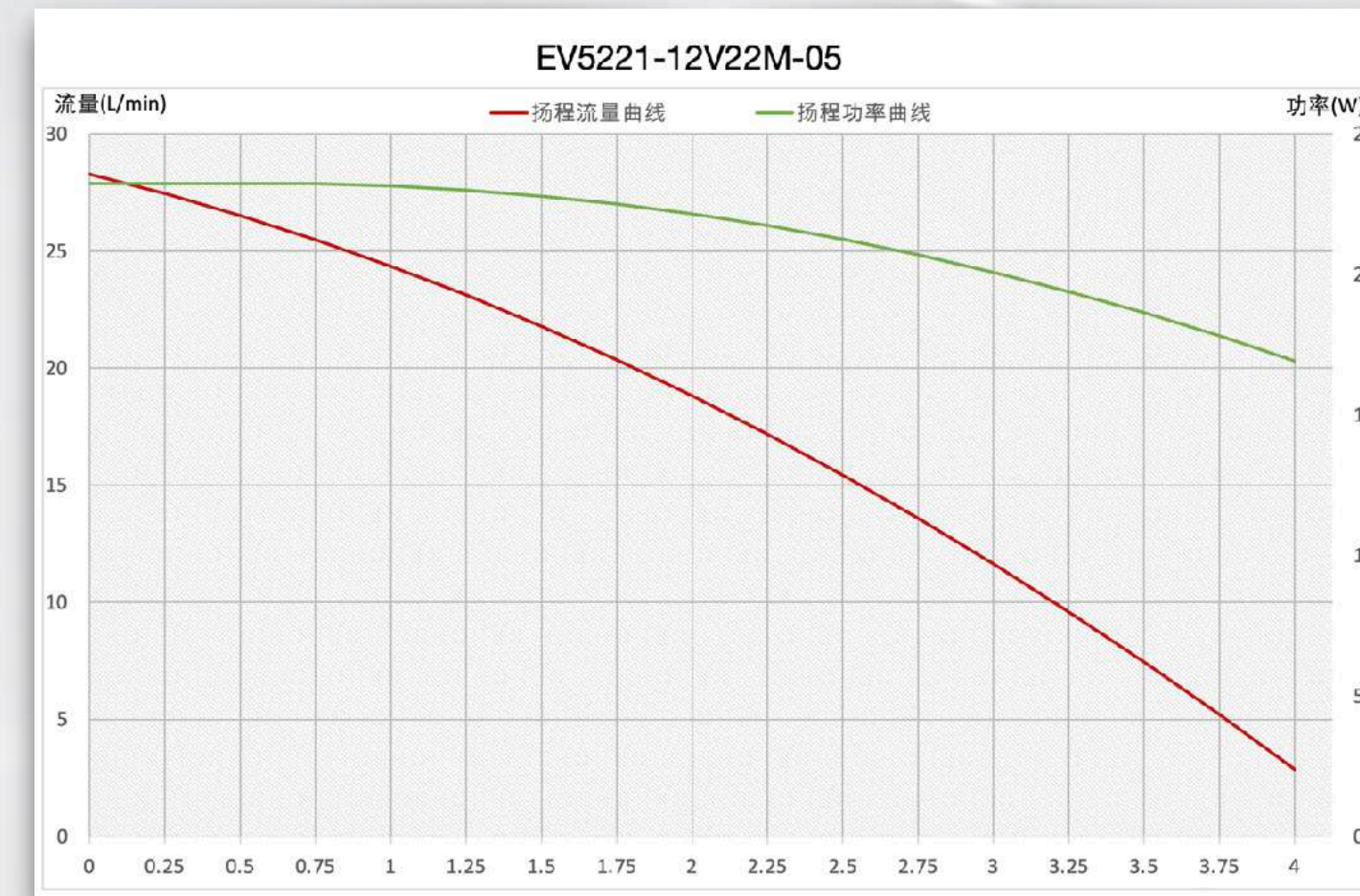
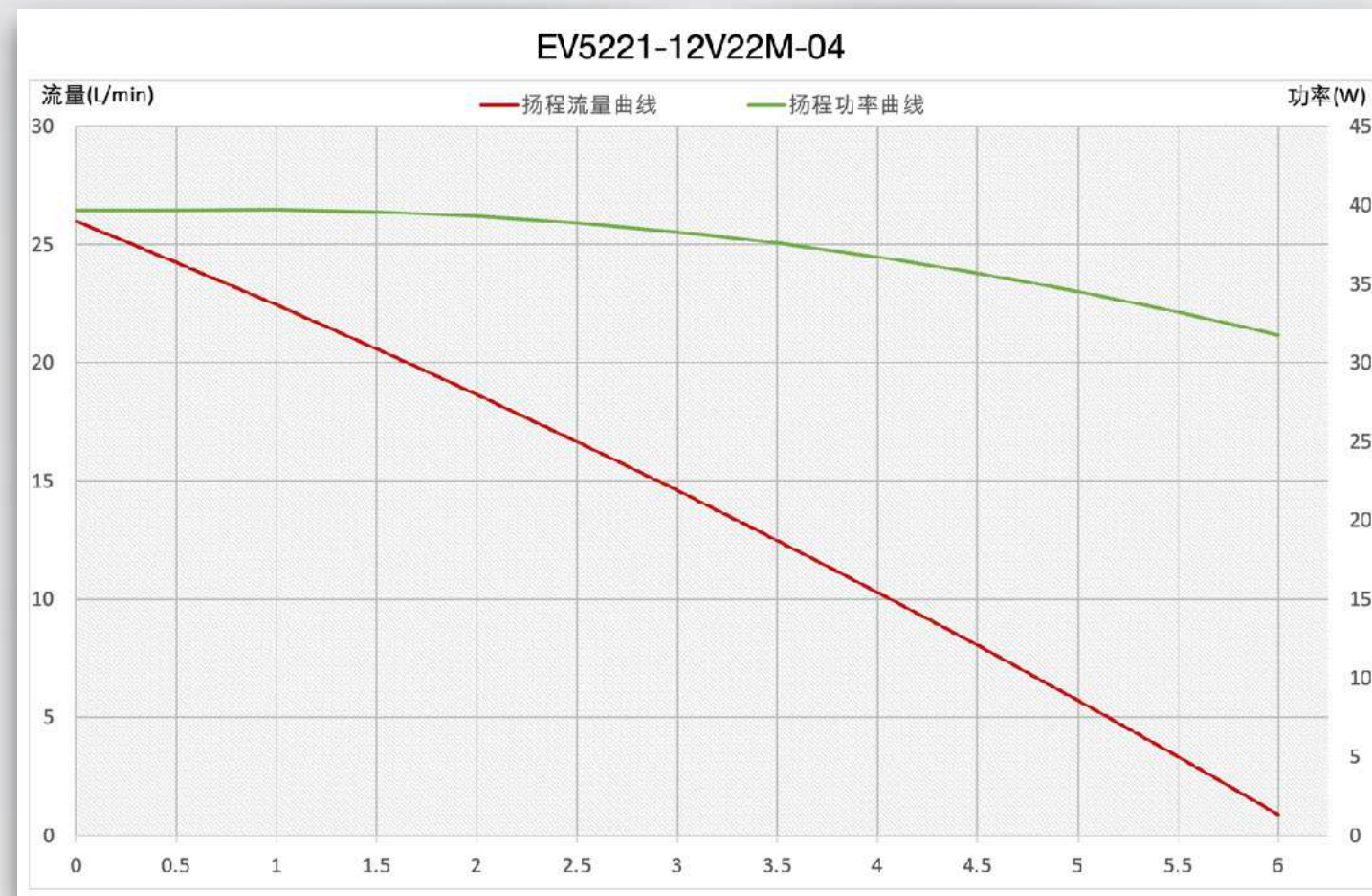
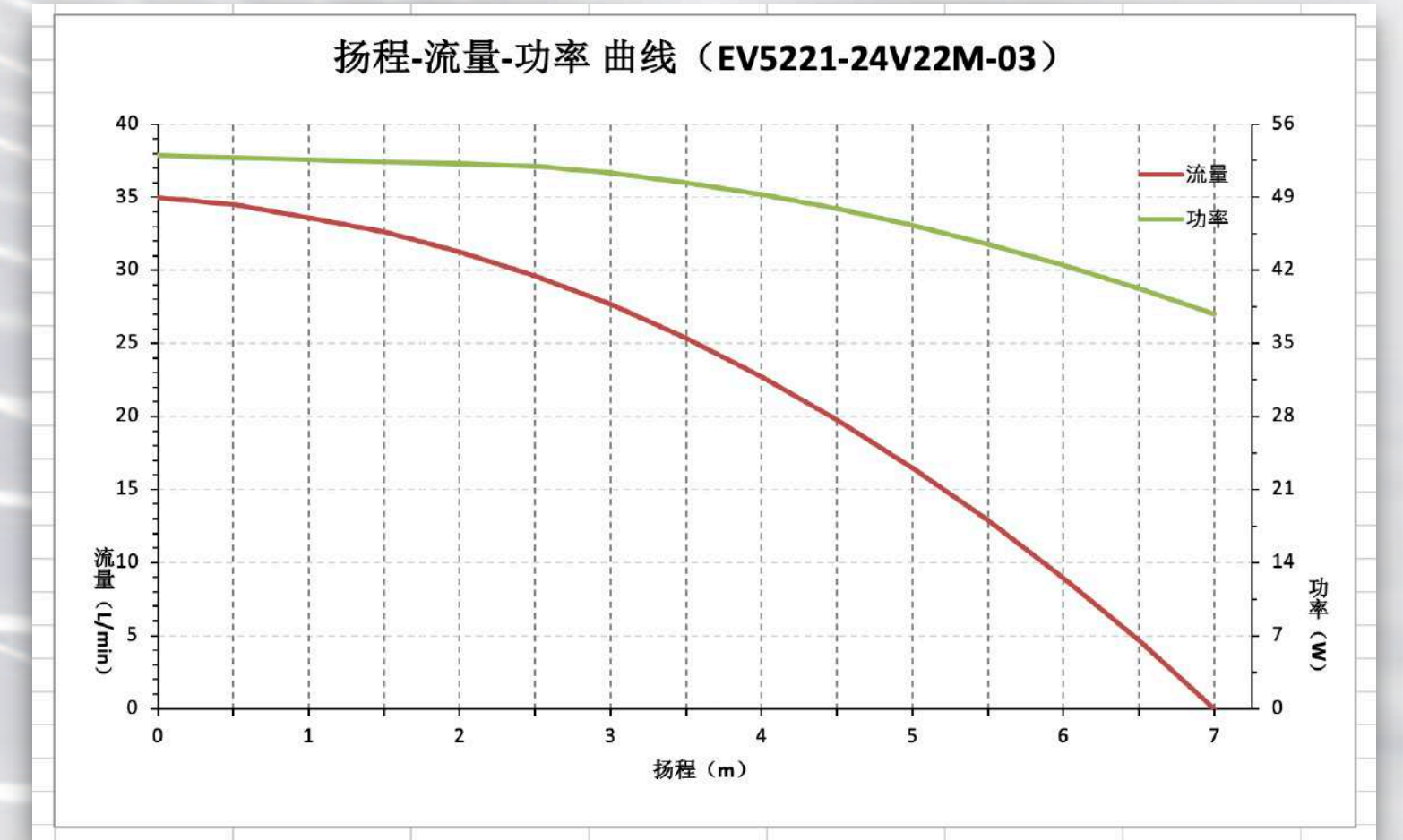
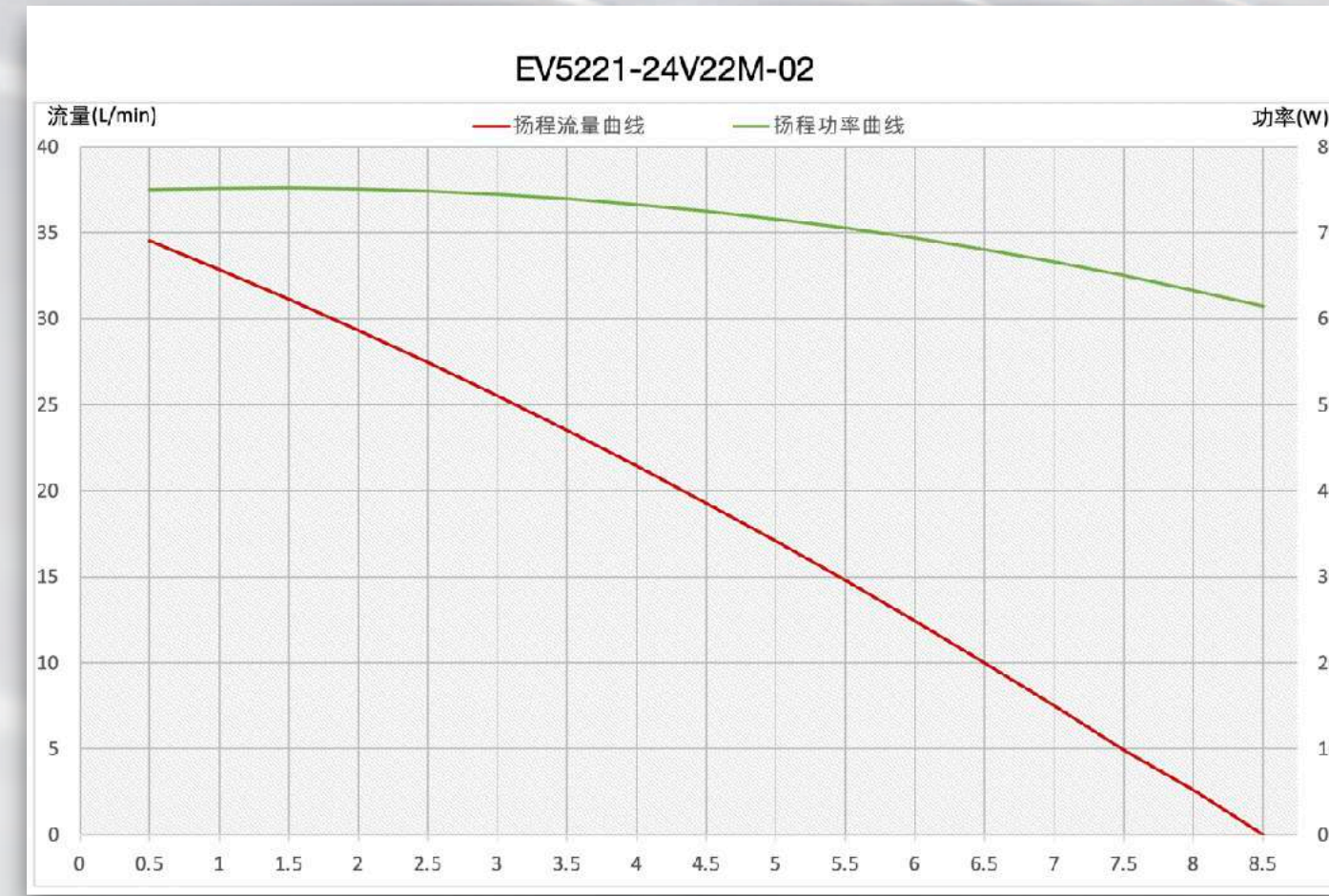
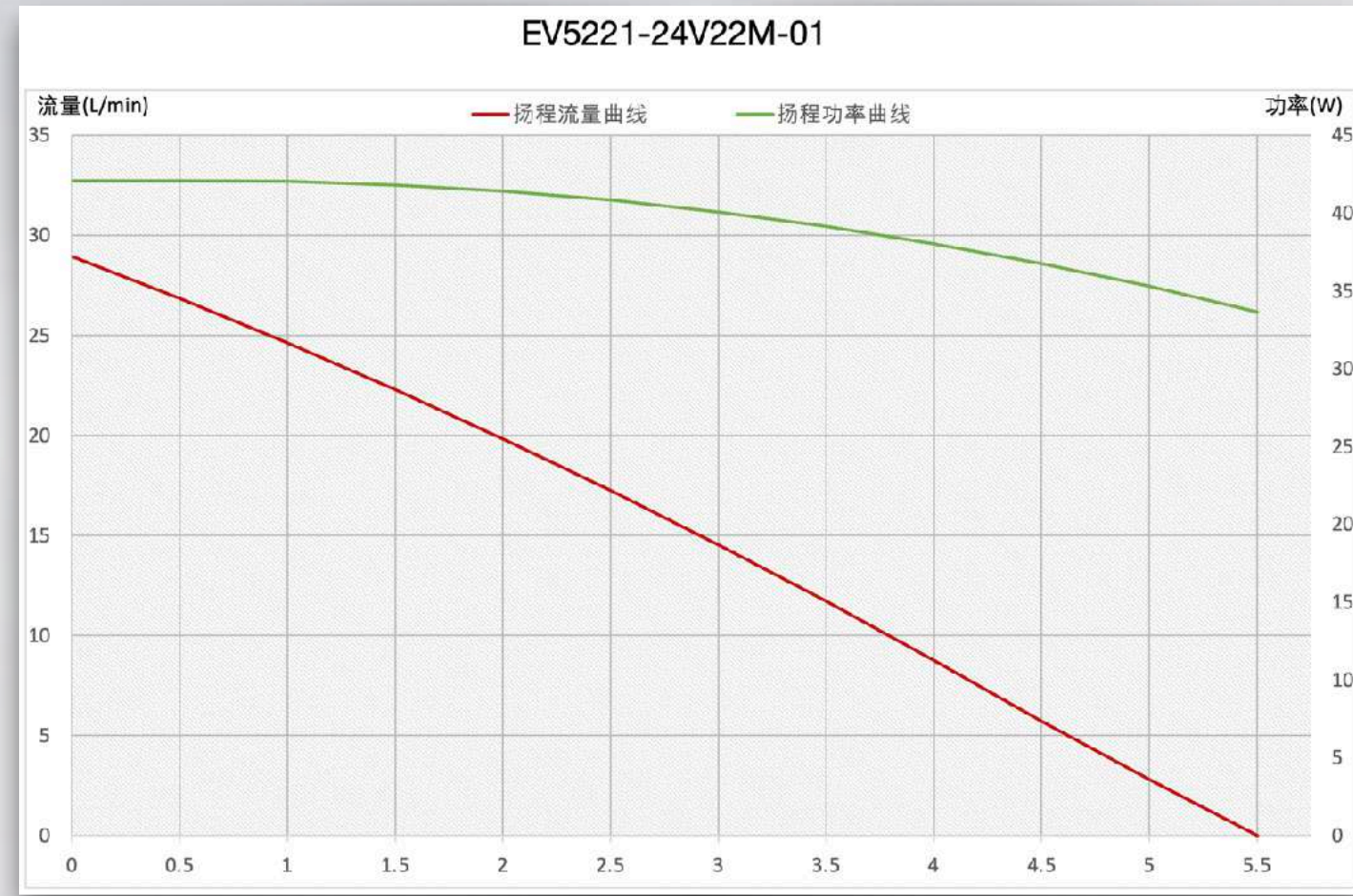
2 Phase / 3 Phase	Water Temperature	Ambient Temperature	Storage Temperature	Pump Body Material	Noise Level	Single / Variable Speed	Controller	Fluids Type
3 Phase	-30 ~ 105 °C	- 30 ~ 85 °C	- 30 ~ 85 °C	PA66 + 30% GF	< 40 dB	Single Speed / Variable Speed (PWM)	Built-In	Water / Coolant (pH 4-10)

#	Voltage	Current	Pressure	Flow Rate	Inlet/Outlet	Weight	Dimensions
EV5221-24V22M-01	24V	1.8A	5.5M (0.55bar)	25.0LPM (1500LPH)	22.0mm	539g ± 10%	91x104.7x105.5m
EV5221-24V22M-02	24V	3.2A	8.8M (0.88bar)	34.0LPM (2040LPH)			
EV5221-24V22M-03	24V	2.0A	7.0M (0.70bar)	35.0LPM (2100LPH)			
EV5221-12V22M-04	12V	3.4A	6.0M (0.60bar)	28.0LPM (1680LPH)			
EV5221-12V22M-05	12V	1.9A	4.0M (0.40bar)	25.0LPM (1500LPH)			
EV5221-24V22M-06	24V	2.0A	6.5M (0.65bar)	30.0LPM (1800LPH)			
EV5221-24V22M-07	24V	3.4A	6.0M (0.60bar)	30.0LPM (1800LPH)			
EV5221-24V22M-08	24V	3.5A	10.0M (1.00bar)	43.0LPM (2580LPH)			
EV5221-24V22M-08-01	24V	3.5A	10.1M (1.01bar)	36.0LPM (2160LPH)			
EV5221-12VDN15-09	12V	3.2A	7.4M (0.74bar)	20.0LPM (1200LPH)	DN15	526g ± 10%	91x97.7x100.5 mm
EV5221-12VDN15-10	12V	3.6A	7.8M (0.78bar)	21.0LPM (1260LPH)			
EV5221-24VDN15-11	24V	2.5A	10.0M (1.00bar)	24.0LPM (1440LPH)			

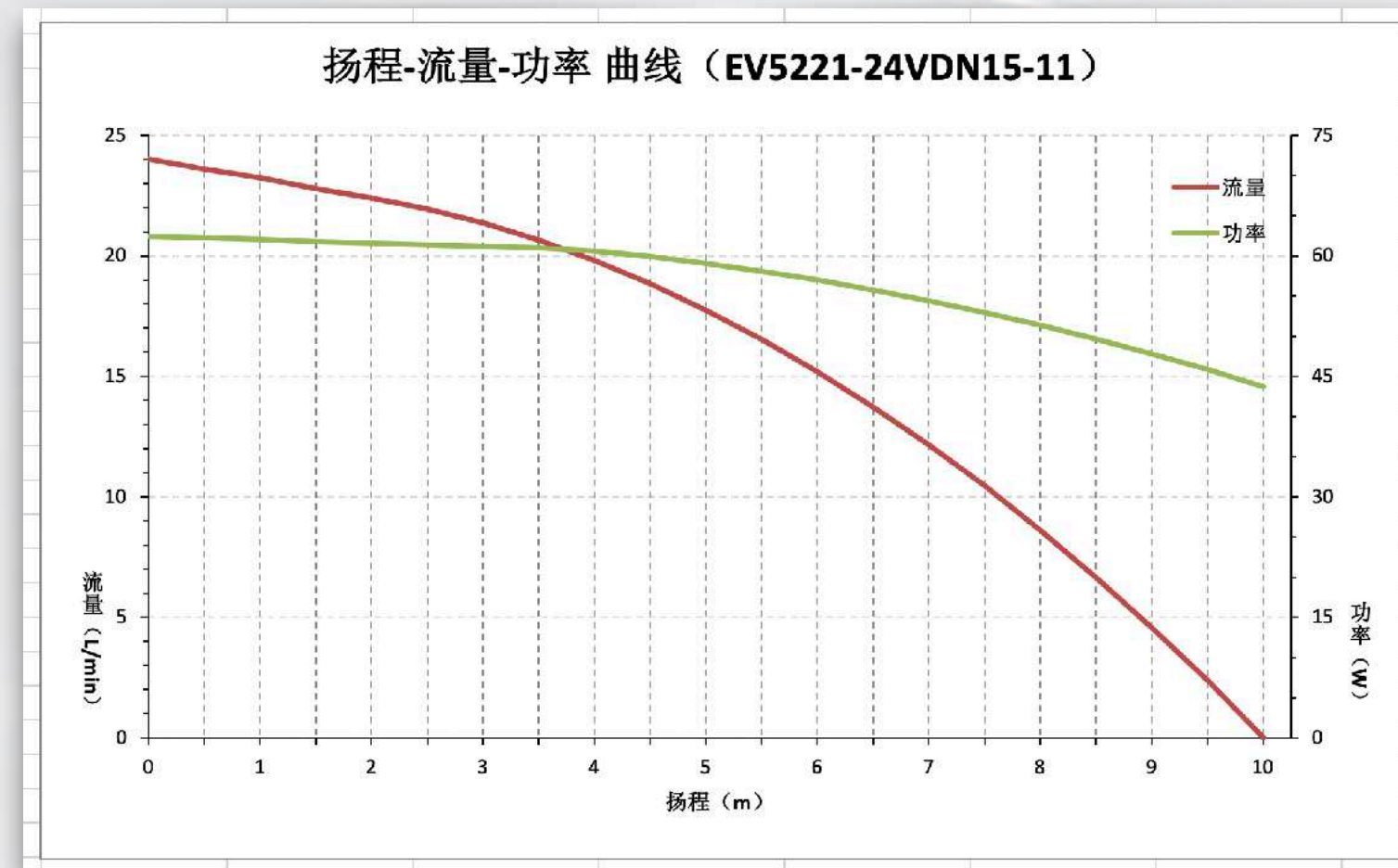
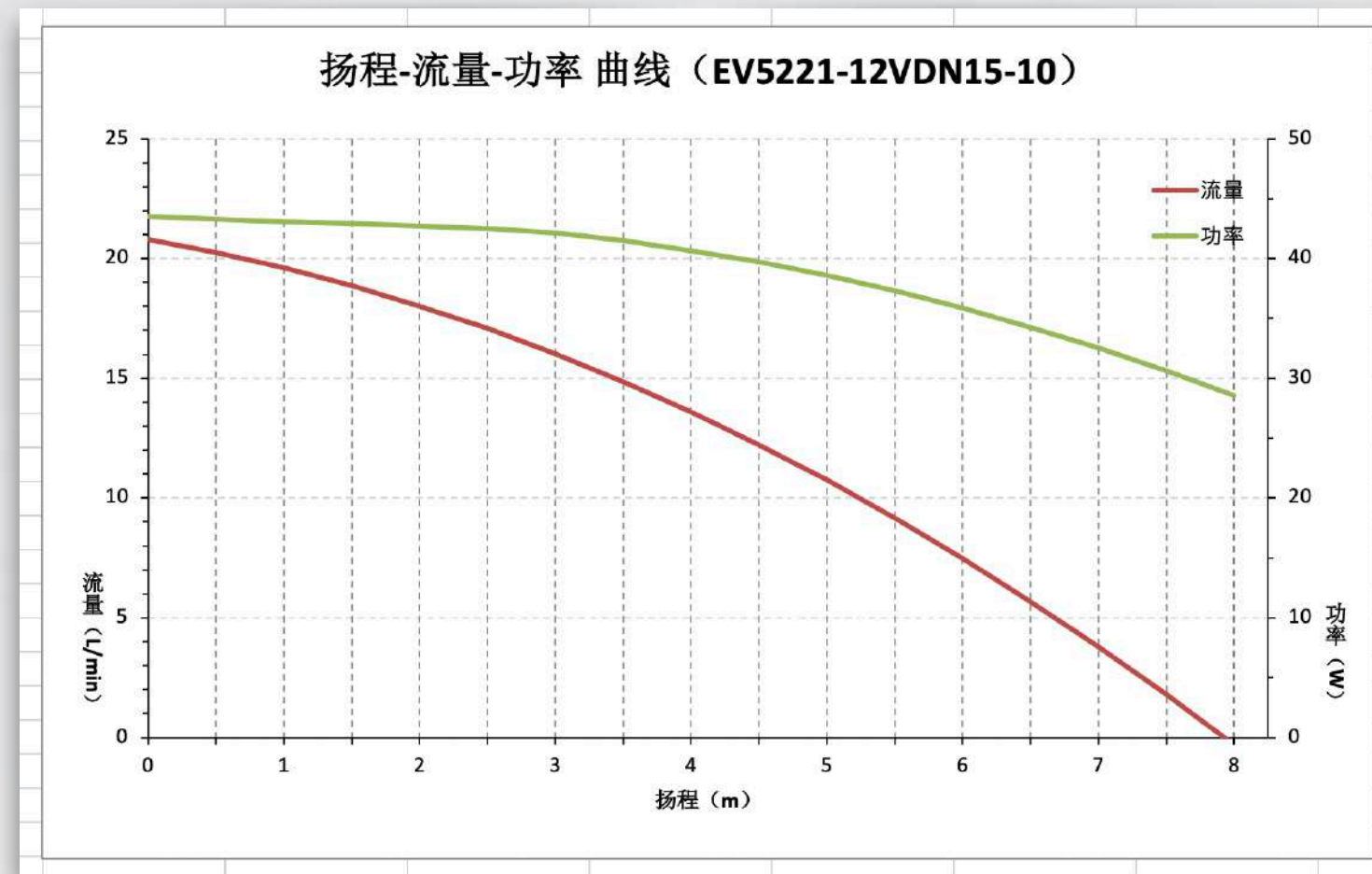
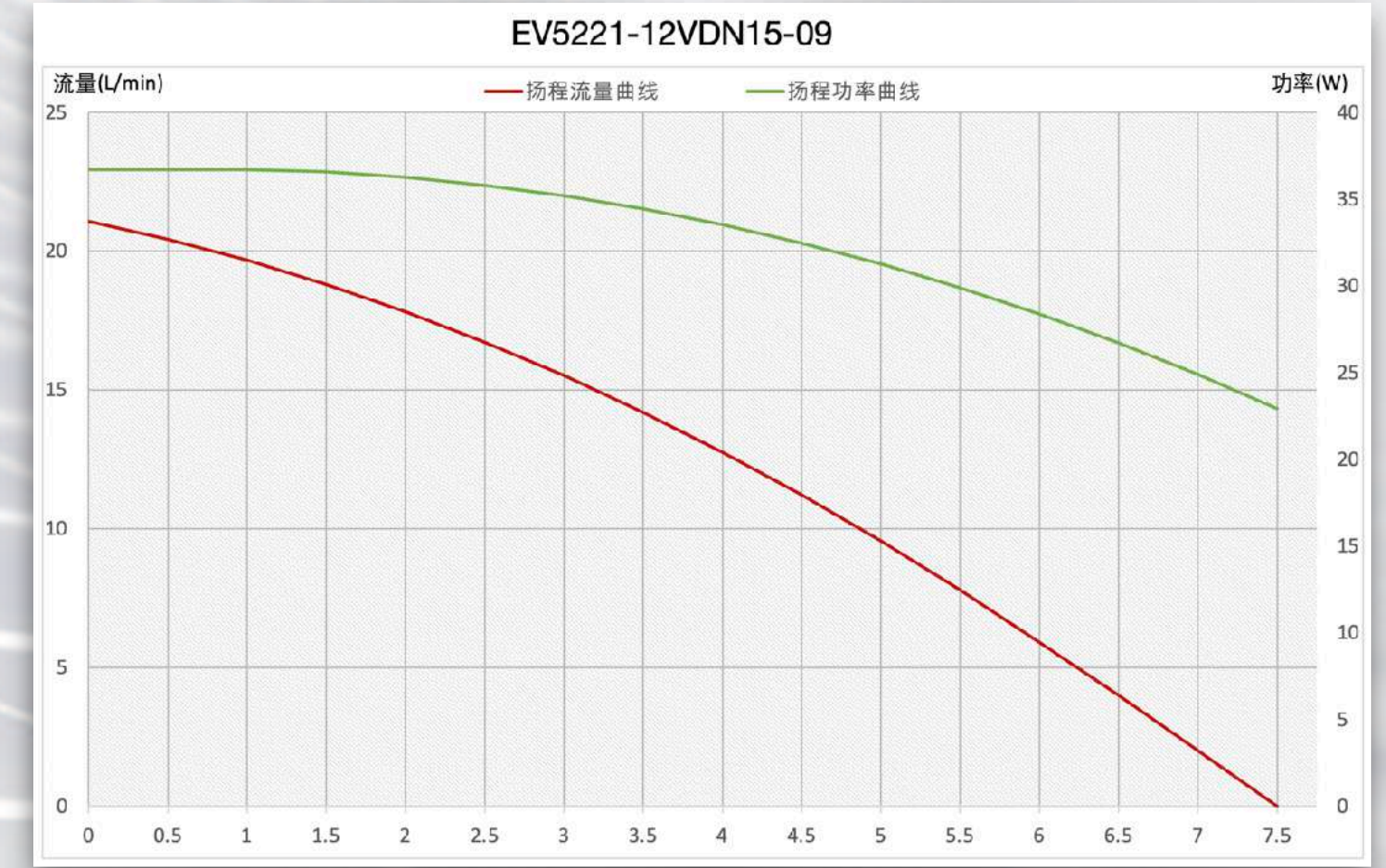
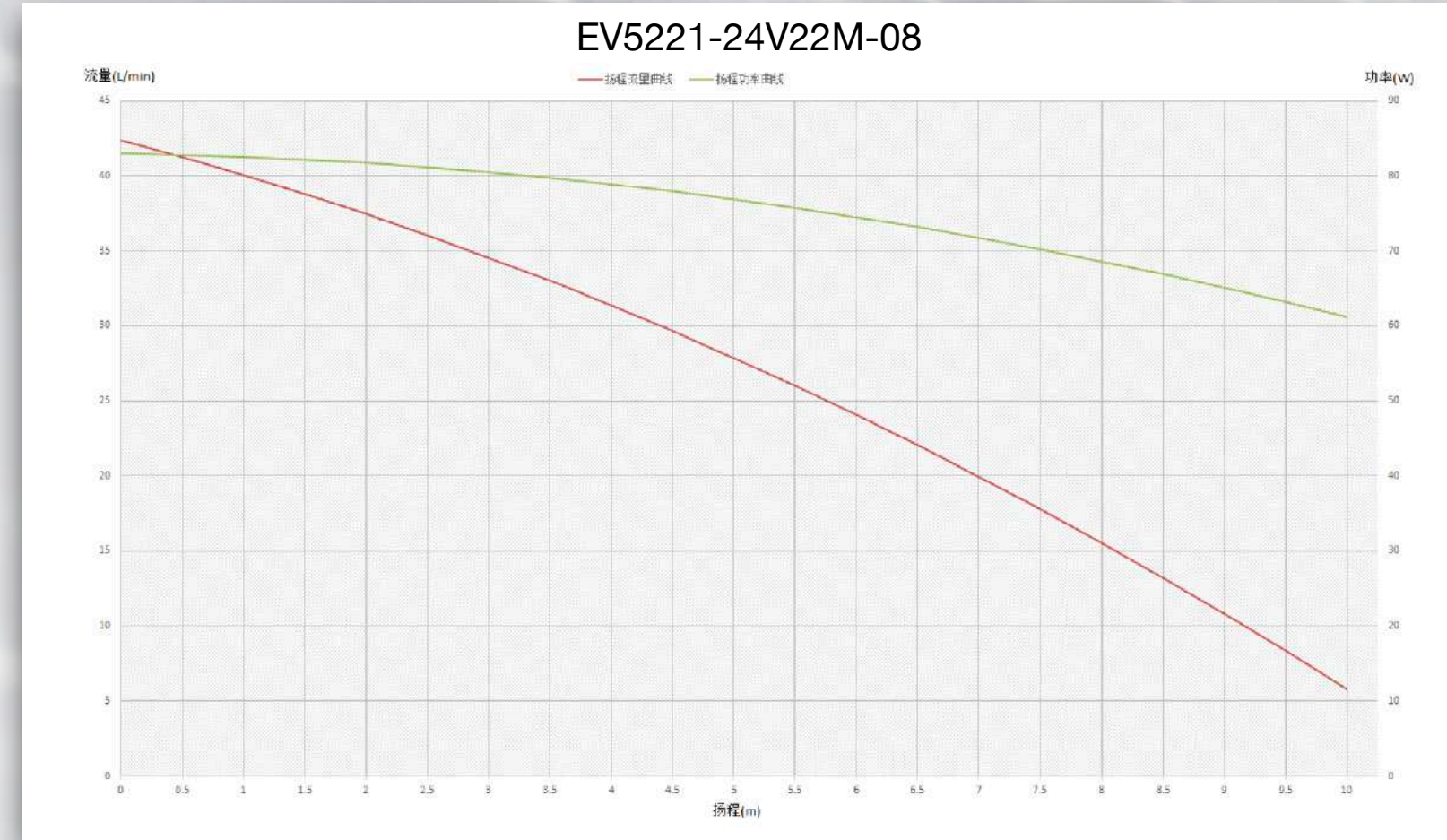
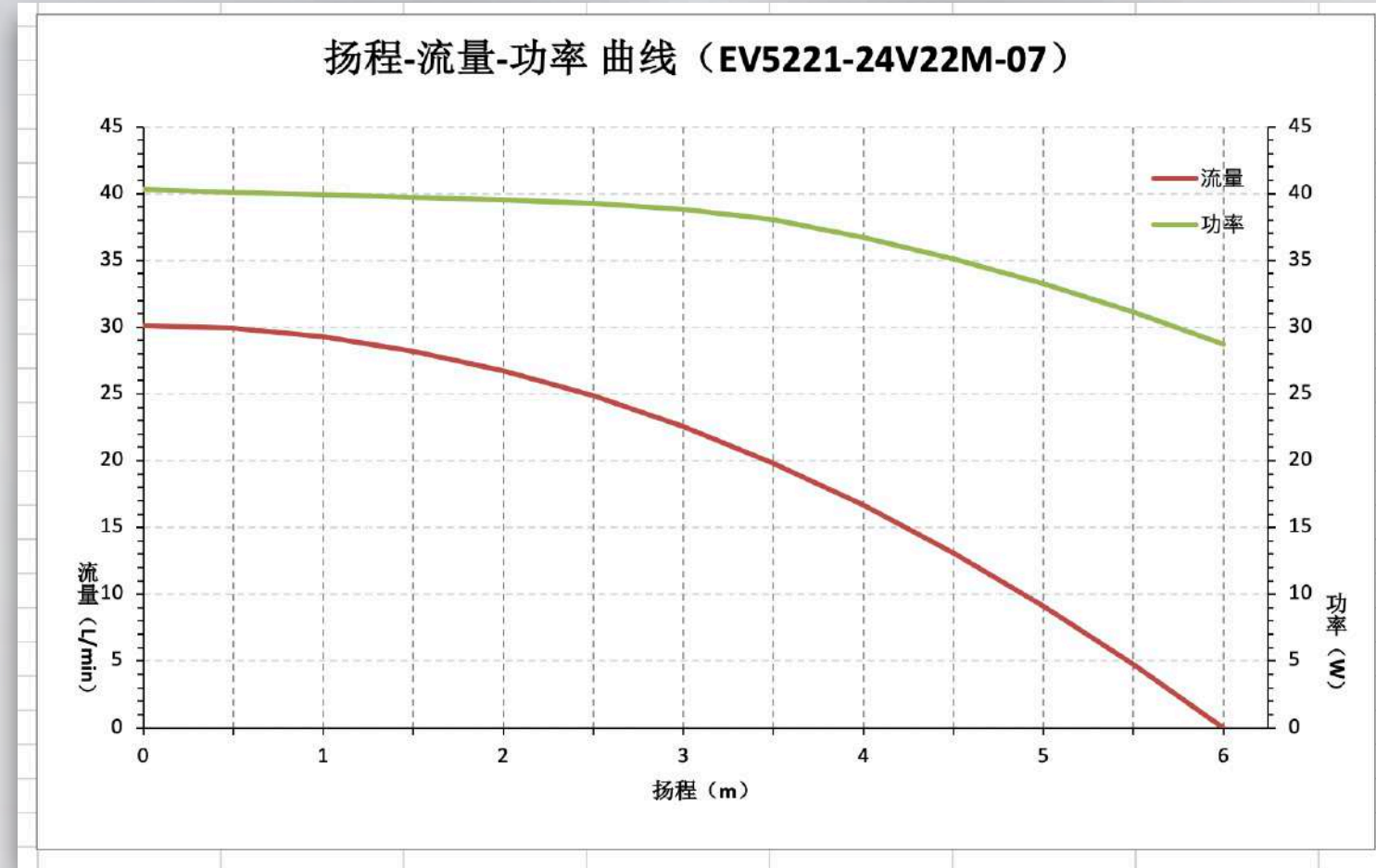
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Electric Water Pump



— Pressure / Flow Curve
— Pressure / Power Curve



— Pressure / Flow Curve
— Pressure / Power Curve

Electric Water Pump

- For Cooling and Heating System
- 3 Phase Brushless Motor
- Centrifugal Pump
- Soft Start
- Single Speed / Variable Speed
- Water Proof Level: IP65



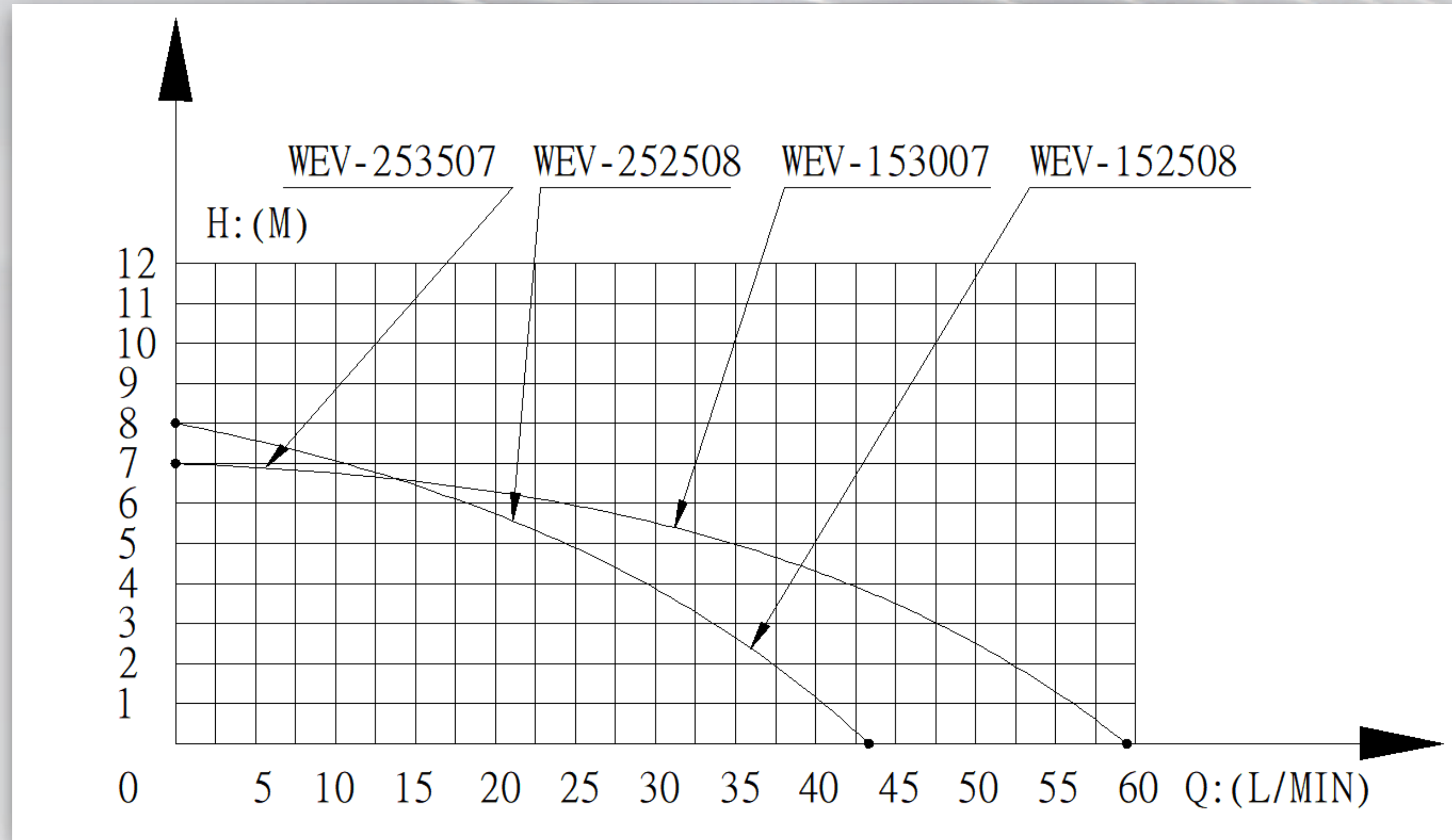
22.0mm



27.0mm

Model #	WEV-152508	WEV-252508	WEV-153007	WEV-253507
Voltage	DC 12V	DC 24V	DC 12V	DC 24V
Voltage Range	DC 10V~16V	DC 14V~30V	DC 10V~16V	DC 14V~30V
Withstanding Voltage*	DC 20V	DC 36V	DC 20V	DC 36V
Current	5.6 A ± 10%	4.5 A ± 10%	5.6 A ± 10%	4.5 A ± 10%
Max. Power	67.2 W	108.0 W	67.2 W	108.0 W
Flow Rate	2500 LPH (41.7LPM)		2800 LPH (46.7LPM)	3500 LPH (58.3LPM)
Pressure	8.0 M (0.80 bar)		7.0 M (0.70 bar)	
Inlet Diameter	22.0 mm		27.0 mm	
Outlet Diameter	22.0 mm		27.0 mm	
Water Temperature	-10 ~ 105 °C			
Ambient Temperature	- 10 ~ 85 °C			
Storage Temperature	- 10 ~ 85 °C			
Dimensions	122.0 x 94.0 x 96.3 mm		124.0 x 94.0 x 96.2 mm	
Pump Body Material	PA66 + 30% GF / Aluminum			
Noise Level	< 40 dB			
Single / Variable Speed	Single Speed / Variable Speed (PWM)			
Controller	Built-in			
Weight	about 800g			

*Pump running in withstanding voltage or voltage exceeding range stated above is not recommended. It may cause pump failure.



Electric Water Pump

- For Cooling and Heating System
- 3 Phase Brushless Motor
- Centrifugal Pump
- Soft Start
- Single Speed / Variable Speed
- Water Proof Level: IP65



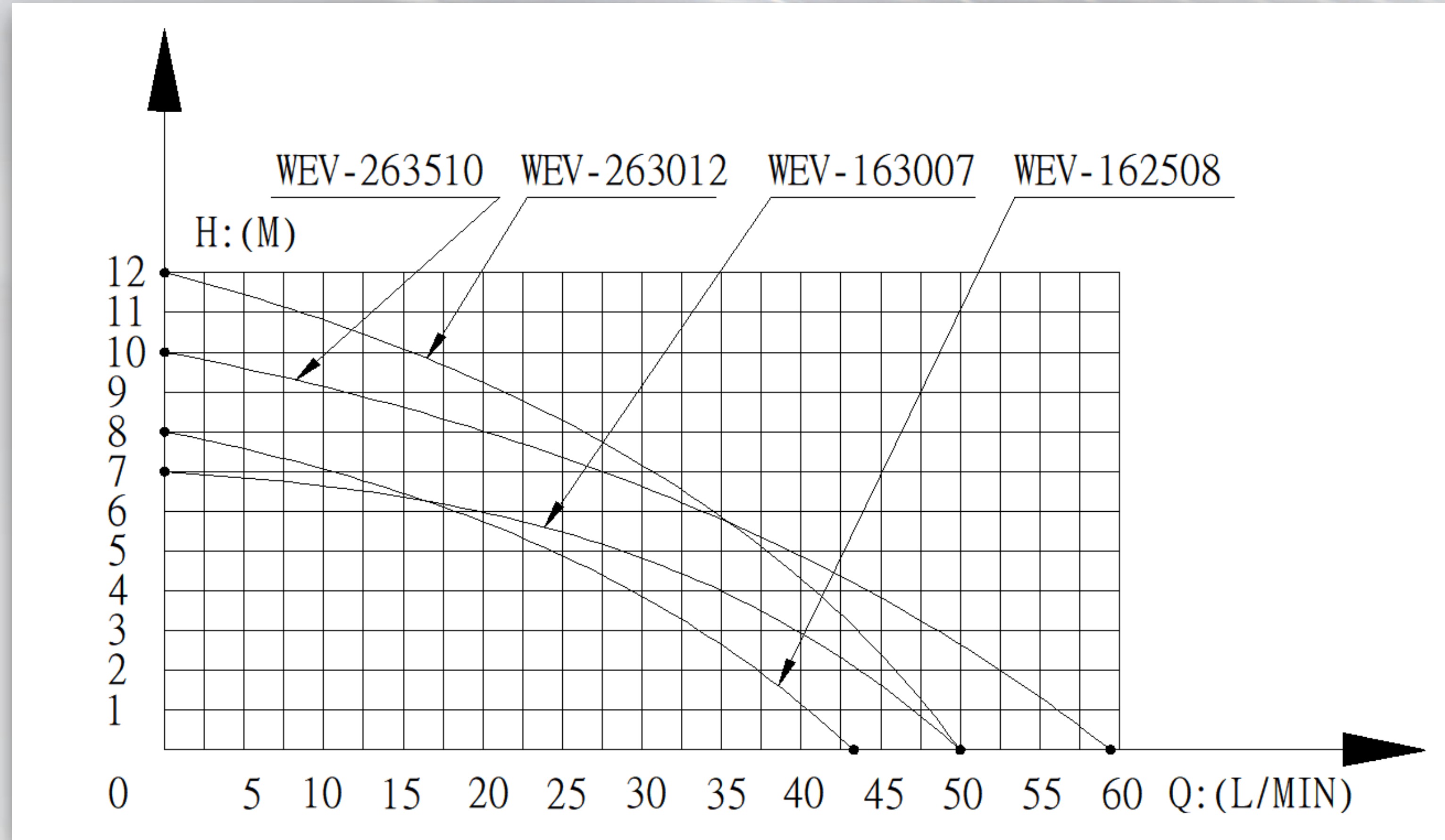
22.0mm



27.0mm

Model #	WEV-162508	WEV-263012	WEV-163007	WEV-263510
Voltage	DC 12 V	DC 24V	DC 12 V	DC 24 V
Voltage Range	DC 10V~16V	DC 14V~30V	DC 10V~16V	DC 14V~30V
Withstanding Voltage*	DC 18V	DC 36V	DC 20V	DC 36V
Current	5.5 A ± 10%	5.5 A ± 10%	5.5 A ± 10%	5.5 A ± 10%
Max. Power	66.0 W ± 10%	132.0 W ± 10%	66.0 W ± 10%	132.0 W ± 10%
Flow Rate	2500 LPH (41.7LPM)	3000 LPH (50.0LPM)	3000 LPH (50.0LPM)	3500 LPH (58.3LPM)
Pressure	8.0 M (0.80 bar)	12.0M (1.20 bar)	7.0 M (0.70 bar)	10.0 M (1.00 bar)
Inlet Diameter	22.0 mm		27.0 mm	
Outlet Diameter	22.0 mm		27.0 mm	
Water Temperature	-10 ~ 105 °C			
Ambient Temperature	- 10 ~ 85 °C			
Storage Temperature	- 10 ~ 85 °C			
Dimensions	154.0 x 114.3 x 122.0 mm (Pump) 67.5 x 46.0 x 20.0 mm (controller)		154.0 x 114.3 x 127.0 mm (Pump) 67.5 x 46.0 x 20.0 mm (controller)	
Pump Body Material	PPS GF30			
Noise Level	< 40 dB			
Single / Variable Speed	Single Speed / Variable Speed (PWM)			
Controller	External			
Weight	about 1.4 kg (Pump only)			

*Pump running in withstanding voltage or voltage exceeding range stated above is not recommended. It may cause pump failure.



Electric Water Pump



WMC-45-21 & WMC-52-21

Specifications

- For Cooling System
- 3 Phase Brushless Motor
- Centrifugal Pump
- Soft Start
- Single Speed / Variable Speed
- Water Proof Level: IP65



2 Phase / 3 Phase	Water Temperature	Ambient Temperature	Storage Temperature	Pump Body Material	Noise Level	Single / Variable Speed	Controller	Fluids Type
3 Phase	-30 ~ 85 °C	- 30 ~ 85 °C	- 30 ~ 85 °C	PA66 + 30% GF	< 40 dB	Single Speed / Variable Speed (PWM)	Built-In	Water / Coolant (pH 4-10)

WMC-45-21

#	Voltage	Current	Pressure	Flow Rate	Inlet/Outlet	Weight	Dimensions
MC4521-12V11M-01	12V	3.5A	10.5M (1.05bar)	13.5LPM (810LPH)	11.0mm	365g ± 10%	96.4x65.0x77.5 mm
MC4521-24V11M-02	24V	3.4A	16.5M (1.65bar)	17.0LPM (1020LPH)			
MC4521-24VDN15-03	24V	3.5A	13.5M (1.35bar)	24LPM (1440LPH)	DN15	375g ± 10%	96.4x65.0x82.5 mm

WMC-52-21

#	Voltage	Current	Pressure	Flow Rate	Inlet/Outlet	Weight	Dimensions
MC5221-12VDN15-01	12V	3.6A	7.8M (0.78bar)	21LPM (1260LPH)	DN15	507g ± 10%	97.7x78.0x100.0 mm
MC5221-24V22M-02	24V	3.5A	10.1M (1.01bar)	36LPM (2160LPH)	22.0mm	520g ± 10%	104.7x78.0x105.0 mm

Electric Water Pump



Micro Water Pump

Specifications

- ➔ For Cooling System
- ➔ 3 Phase Brushless Motor
- ➔ Centrifugal Pump
- ➔ Soft Start
- ➔ Single Speed / Variable Speed (0-5V)
- ➔ Water Proof Level: IP65



36-09



36-07

Model #	36-09	36-07
Voltage	DC 12 V	DC 12 V
Current	0.34 A ± 10%	0.41 A ± 10%
Max. Power	4.08 W ± 10%	4.92W ± 10%
Flow Rate	5.3 LPM (318 LPH)	3.5 LPM (210 LPH)
Pressure	2.0 M (0.20 bar)	3.0 M (0.30 bar)
Inlet Diameter	9.0 mm	7.0 mm
Outlet Diameter	9.0 mm	7.0 mm
Water Temperature	-10 ~ 85 °C	
Ambient Temperature	- 10 ~ 85 °C	
Storage Temperature	- 10 ~ 85 °C	
Dimensions	58.7x41.7x53.8 mm	54.2x41.7x53.8 mm
Weight	115g ± 10%	112g ± 10%
Pump Body Material	Nylon	
Noise Level	< 40 dB	
Single / Variable Speed	Single Speed / Variable Speed (0-5V)	
Controller	Built-in	

*Pump running in withstanding voltage or voltage exceeding range stated above is not recommended. It may cause pump failure.

Electric Water Pump

Installation

Micro Water Pump	WEV-140505E	WEV-140505G	WEV-140505I	WEV-45-21 / WMC-45-21			
							
WEV-52-21 / WMC-52-21				WEV 5 Series		WEV 6 Series	
							

→ Water In
→ Water Out

STANDARD

PWM Signal

- Frequency: 50-800 HZ
- Duty: 0-99.9%
- Max. 5V
- For: WEV-140505E,
WEV-45-21, WEV-52-21
WEV 5 Series, WEV 6 Series,
WMC-45-21 & WMC-52-21

OPTIONAL

CAN

- YT protocols or
- Client's protocols
- Developing time: 90 days
- MOQ: 1,000 pcs
- For: WEV-140505E,
WEV-140505E-23Z
WEV-240505E
WEV-240505E-23Z
WEV-45-21, WEV-52-21,
WMC-45-21, WMC-52-21
WEV 5 Series & WEV 6 Series

PWM Signal

- Frequency: 50-800 HZ
- Duty: 0-99.9%
- Max. 5V
- MOQ: 1,000 pcs
- For: WEV-140505G, WEV-140505G-23Z
WEV-240505G, WEV-240505G-23Z
WEV-240505E, WEV-240505E-23Z
WEV-140505E-23Z, WEV-140505I,
Micro Water Pump

0-5V

- MOQ: 1,000 pcs
- For: Micro Water Pump

	WEV-140505E	WEV-240505E WEV-140505E-23Z WEV-240505E-23Z	WEV-140505G WEV-240505G WEV-140505G-23Z WEV-240505G-23Z	WEV-140505I	WEV-45-21	WEV-52-21	WMC-45-21	WMC-52-21	WEV 5Series	WEV 6Series	Micro Water Pump
External Controller	V	V									
Built-in Controller			V	V	V	V	V	V	V	V	V
PWM	V	▲	▲	▲	V	V	V	V	V	V	▲
CAN	▲	▲			▲	▲	▲	▲	▲	▲	
0~5V											V

V : Standard, we can supply without MOQ request.

▲ : Optional (Developing lead time: 60 days /MOQ: 1,000 pc)

① Scan QR code

② Testing data output

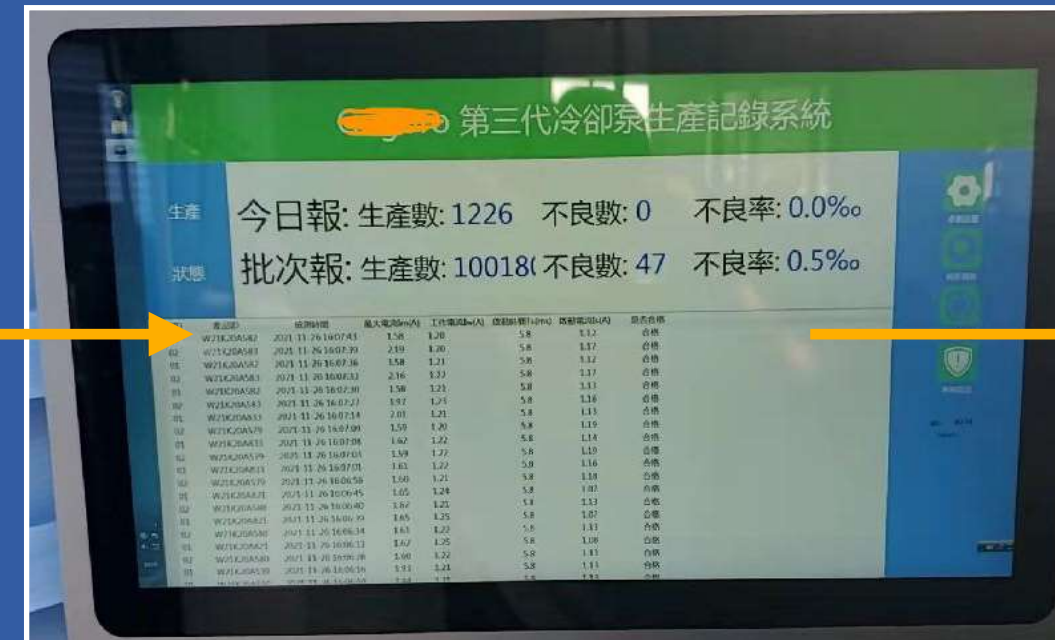
③ Testing data uploading to server



①



②



③

儀器ID	產品ID	檢測時間	最大電流Im(A)	工作電流Iw(A)	啟動時間Ts(ms)	啟動電流Is(A)	是否合格
02	W21K20A436	2021-11-26 16:07:57	1.60	1.23	5.8	1.15	合格
01	W21K20A582	2021-11-26 16:07:43	1.58	1.20	5.8	1.12	合格
02	W21K20A583	2021-11-26 16:07:39	2.19	1.20	5.8	1.17	合格
01	W21K20A582	2021-11-26 16:07:36	1.58	1.21	5.8	1.12	合格
02	W21K20A583	2021-11-26 16:07:33	2.16	1.22	5.8	1.17	合格
01	W21K20A582	2021-11-26 16:07:30	1.58	1.21	5.8	1.13	合格
02	W21K20A583	2021-11-26 16:07:27	1.97	1.23	5.8	1.16	合格
01	W21K20A833	2021-11-26 16:07:14	2.01	1.21	5.8	1.13	合格
02	W21K20A579	2021-11-26 16:07:09	1.59	1.20	5.8	1.19	合格
01	W21K20A833	2021-11-26 16:07:08	1.62	1.22	5.8	1.14	合格
02	W21K20A579	2021-11-26 16:07:03	1.59	1.22	5.8	1.19	合格
01	W21K20A833	2021-11-26 16:07:01	1.61	1.22	5.8	1.16	合格
02	W21K20A579	2021-11-26 16:06:56	1.60	1.21	5.8	1.18	合格
01	W21K20A821	2021-11-26 16:06:45	1.65	1.24	5.8	1.07	合格
02	W21K20A580	2021-11-26 16:06:40	1.62	1.21	5.8	1.13	合格
01	W21K20A821	2021-11-26 16:06:39	1.65	1.25	5.8	1.07	合格
02	W21K20A580	2021-11-26 16:06:34	1.61	1.22	5.8	1.13	合格
01	W21K20A821	2021-11-26 16:06:33	1.62	1.25	5.8	1.08	合格
02	W21K20A580	2021-11-26 16:06:28	1.60	1.22	5.8	1.13	合格
01	W21K20A580	2021-11-26 16:06:16	1.93	1.21	5.8	1.13	合格

10G Vibration Test

For WEV-140505G

ETC TAIWAN TESTING AND CERTIFICATION CENTER

Report No. : 21-10-EAT-035-E00

Description of Test Conditions :

Vibration test

Test voltage : 12 Vdc

Test condition : Refer to table 1

Direction : X axis, Y axis, Z axis (3 axes)

Duration : 22 hours per axis, total 66 hours

Test setup : Refer to Fig. 4 to Fig. 6

Require : After test record flow rate and pressure

Table 1 : vibration test condition

Frequency (Hz)	Acceleration	Sweep Type	Sweep rate	Number of Sweeps Per Axis	Number of Axes	Duration
100	50	Log	1 Oct/Min	495	3	22 h
200	50					
240	100					
440	100					
500	50					
600	50					

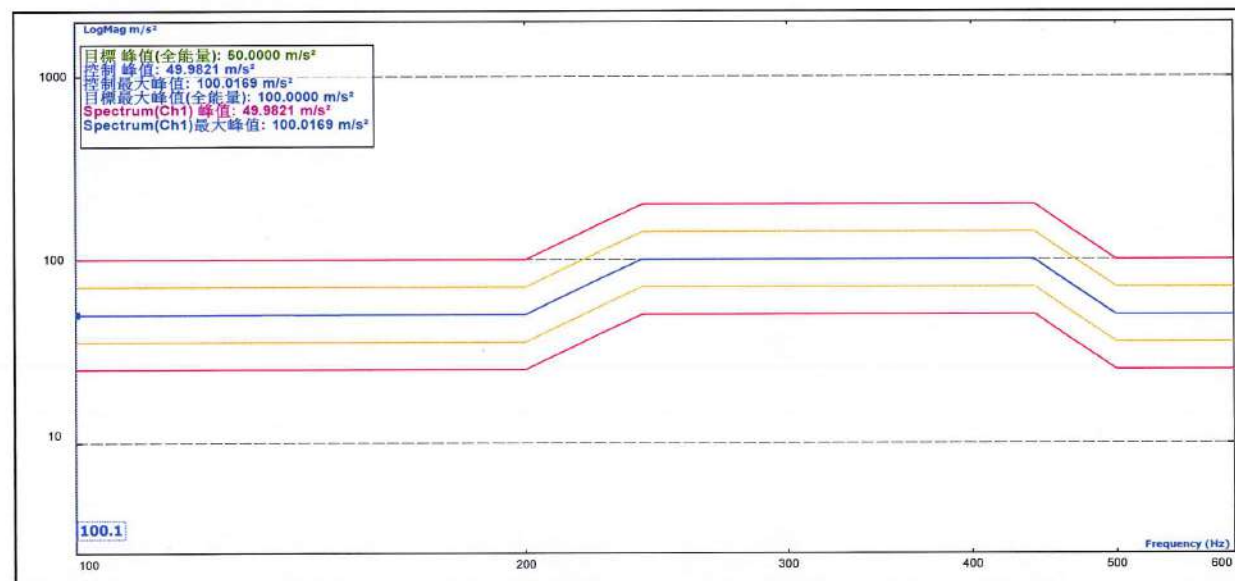


Fig. 3 : The waveform for vibration test

ETC TAIWAN TESTING AND CERTIFICATION CENTER

Report No. : 21-10-EAT-035-E00

Testing Result :

Temperature Cycle Test

Date of testing : Oct. 18, 2021 to Oct. 20, 2021

Measure environment : Temp. 20 °C / 47 %R.H.

WEV-140505G	Result	
	Output water flow rate (l/min)	Output water pressure (kpa)
	8.5	56.1

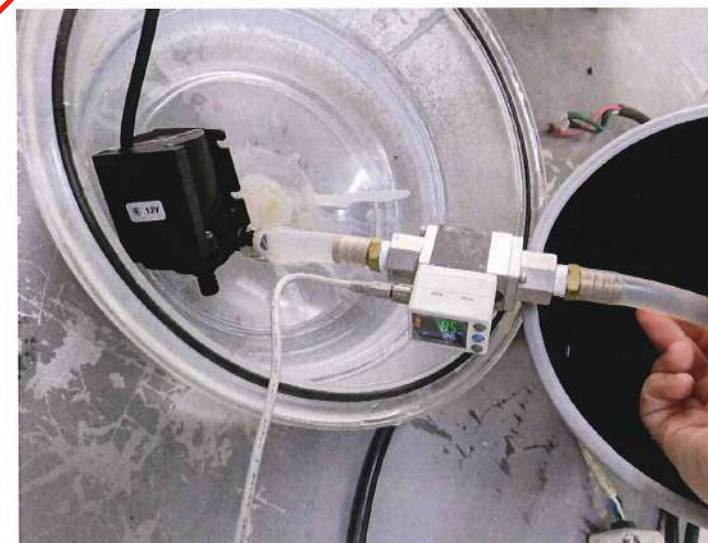


Fig. 7 : Output water pressure

EMC ECE R10(Rev.06)

For WEV-140505E,

ETC TAIWAN TESTING AND CERTIFICATION CENTER

Report No.: 21-12-MAC-019

EMC TESTING DEPARTMENT

Page: 3/34

1. TEST REPORT CERTIFICATION

Client	: TAIYO SANGYO TRADING & MARINE SERVICE LTD.
Address	: 〒234-0051 1-7-8 Hino, Konan Ward, Yokohama City, Kanagawa Prefecture, Japan.
Manufacturer	: LHY TECH. CORP.
Address	: No. 92, Ln. 646, Sec. 3, Jinma Rd., Changhua City, Changhua County 500013, TAIWAN
EUT	: DC BRUSHLESS WATER PUMP
Brand/Trade	: N/A
Model	: WEV-140505G
Serial Model	: WEV-140505E
Power Source	: DC 12V
Test Power Source	: DC 12V
Test Results	: PASS

MEASUREMENT PROCEDURE USED : ECE R10(Rev.06)

We hereby certify that :

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

The compliance test is only certified for the test equipment and the results of the testing report relate only to the item tested. The compliance test of this report was conducted in accordance with the appropriate standards. When the measurement uncertainty can meet the requirements of international standards, it is not included in the verification of test result. It's not intention to assure the quality and performance of the product.

This report shall not be reproduced except in full, without the approval of ETC.

Laboratory Introduction: TAIWAN TESTING AND CERTIFICATION CENTER is recognized, filed and mutual recognition arrangement as following:

- ① ISO/IEC 17025 : TAF(0371), NVLAP(Lab code: 200133-0), CBTL(TÜV SÜD)
- ② Recognized : BSMI, NCC, FCC(TW1112), ISED(Industry Canada Site # 2949A-2)
- ③ Filing : VCCI (C-13518, R-13177, G-10098, T-11682)
- ④ MRA : Australia, New Zealand, Singapore

Reliability

For WEV-140505G

1. Storage test

Sample No. : #1, #2, #3, #4, #5
 Sample condition : Non-operation
 Test temperature : Refer to Table 1
 Test humidity : Refer to Table 1
 Test duration : 418 hours
 Test setup : Refer to Fig. 3
 Require : After test record flow rate, pressure, and leakage test (keep pressure 2 bar for 1 min in the cavity)

Table 1 : Storage test profile

Step	Temp. (°C)	Hum. (%)	Dwell time (h)	Time (h)
1	25	--	0	0
2	25 → 85	95	2	2
3	85	95	94	96
4	85 → 25	--	2	98
5	25	--	2	100
6	25 → -40	--	2	102
7	-40	--	72	174
8	-40 → 25	--	2	176
9	25	--	2	178
10	25 → 85	50	1	179
11	85	95	3	182
12	85 → 25	95 → 50	1	183
13	25	50	1	184
14	25 → -40	--	1	185
15	-40	--	3	188
16	-40 → 25	50	1	189
17	25	50	1	190
18	Step 10 to 17 repeat 19 cycles			418

Testing Result :

1. Storage test

Date of testing : Jan. 30, 2019 to Feb. 15, 2019
 Measuring environment : Temp. 23 °C to 26 °C / 52 %R.H. to 57 %R.H.

Sample No.	Result		
	Output water flow rate (l/min)	Output water pressure (kpa)	Leakage test
#1	7.9	51.3	No leakage
#2	8.1	50.3	No leakage
#3	8.1	50.7	No leakage
#4	8.0	52.0	No leakage
#5	8.2	52.0	No leakage

※Output water flow rate, output water pressure and leakage test refer to Fig. 9 to Fig.11

2. Thermal shock test

Sample No. : #1, #2, #3
 Sample condition : Non-operation
 Test temperature : -40 °C to 85 °C
 Translation time : < 2 minutes
 Dwell Time : 0.5 hour / each temp.
 Test duration : 100 cycles (1 h / per cycles), total 100 hours
 Test setup : Refer to Fig. 4
 Require : After test record flow rate, pressure, and leakage test (keep pressure 2 bar for 1 min in the cavity)



Fig. 4 : Thermal shock test

2. Thermal shock test

Date of testing : Feb. 21, 2019 to Feb. 25, 2019
 Measuring environment : Temp. 23 °C to 26 °C / 52 %R.H. to 57 %R.H.

Sample No.	Result		
	Output water flow rate (l/min)	Output water pressure (kpa)	Leakage test
#1	8.1	49.7	No leakage
#2	8.2	50.7	No leakage
#3	8.1	53.0	No leakage

※Output water flow rate, output water pressure and leakage test refer to Fig. 9 to Fig.11

3. Vibration test

Sample No. : #1, #2, #3
 Test voltage : 14 Vdc
 Waveform : Random wave (Refer to Fig. 5)
 Direction : X axis, Y axis, Z axis (3 axes)
 Duration : 8 hours per axis, total 24 hours
 Instant disconnect : <100 ms
 Require : After test record flow rate, pressure, and leakage test (keep pressure 2 bar for 1 min in the cavity)

Frequency(Hz)	Acceleration((g)2/Hz)
10	0.10395
15	0.10395
25	0.09008
60	0.02432
72	0.02432
160	0.00522
210	0.00685
260	0.01477
288	0.01387
406	0.0027
500	0.00036

2.5 Grms

Test setup : Refer to Fig. 6 to Fig. 8

3. Vibration test

Date of testing : Mar. 13, 2019 to Mar. 15, 2019
 Measuring environment : Temp. 23 °C to 26 °C / 52 %R.H. to 57 %R.H.

Sample No.	Result		
	Output water flow rate (l/min)	Output water pressure (kpa)	Leakage test
#1	8.2	51.2	No leakage
#2	7.9	52.7	No leakage
#3	7.9	53.0	No leakage

※Output water flow rate, output water pressure and leakage test refer to Fig. 9 to Fig.11



Fig. 9 : Output water flow rate

Reliability For WEV-140505G

ETC ELECTRONICS TESTING CENTER, TAIWAN Report No.: 19-03-EAT-086-E00

Description of Test Conditions

- Power on / off**
 - Sample No. : 1, 2, 3
 - Sample condition : Cycle run (5s on / 1s off)
 - Power switch times : 550000
 - Test voltage : 14 V_{dc}
 - Water cooling liquid temperature : 70 °C
 - Test setup : Refer to Fig. 3
 - Require : After test record flow rate, pressure, and leakage test (keep pressure 2 bar for 1 min in the cavity)




Fig. 3 : Power on / off

Page 3 of 8

Testing Result :

1. Power on / off

Date of testing : Mar. 22, 2019 to May 03, 2019

Measuring environment : Temp. 23 °C to 26 °C / 52 %R.H. to 57 %R.H.

Sample No.	Result		
	Output water flow rate (l/min)	Output water pressure (kpa)	Leakage test
1	8.1	50.4	No leakage
2	7.9	51.1	No leakage
3	7.9	50.3	No leakage

※Output water flow rate, output water pressure and leakage test refer to Fig.5 to Fig.7

ETC ELECTRONICS TESTING CENTER, TAIWAN Report No.: 19-03-EAT-086-E00

- High temperature operation test**
 - Sample No. : 4, 5, 6
 - Sample condition : Normal Operation
 - Test voltage : 14 V_{dc}
 - Water cooling liquid temperature : 70 °C
 - Test duration : 2 months (60 days)
 - Instant disconnect : <100 ms
 - Test setup : Refer to Fig. 4
 - Require : After test record flow rate, pressure, and leakage test (keep pressure 2 bar for 1 min in the cavity)




Fig. 4 : High temperature operation test

Page 4 of 8

2. High temperature operation test

Date of testing : Mar. 22, 2019 to May 23, 2019

Measuring environment : Temp. 23 °C to 26 °C / 52 %R.H. to 57 %R.H.

Sample No.	Result		
	Output water flow rate (l/min)	Output water pressure (kpa)	Leakage test
1	7.9	50.1	No leakage
2	8.2	49.7	No leakage
3	8.2	49.9	No leakage

※Output water flow rate, output water pressure and leakage test refer to Fig.5 to Fig.7

Development Capability

For ALL Models

Procedures

For ALL Models

Service

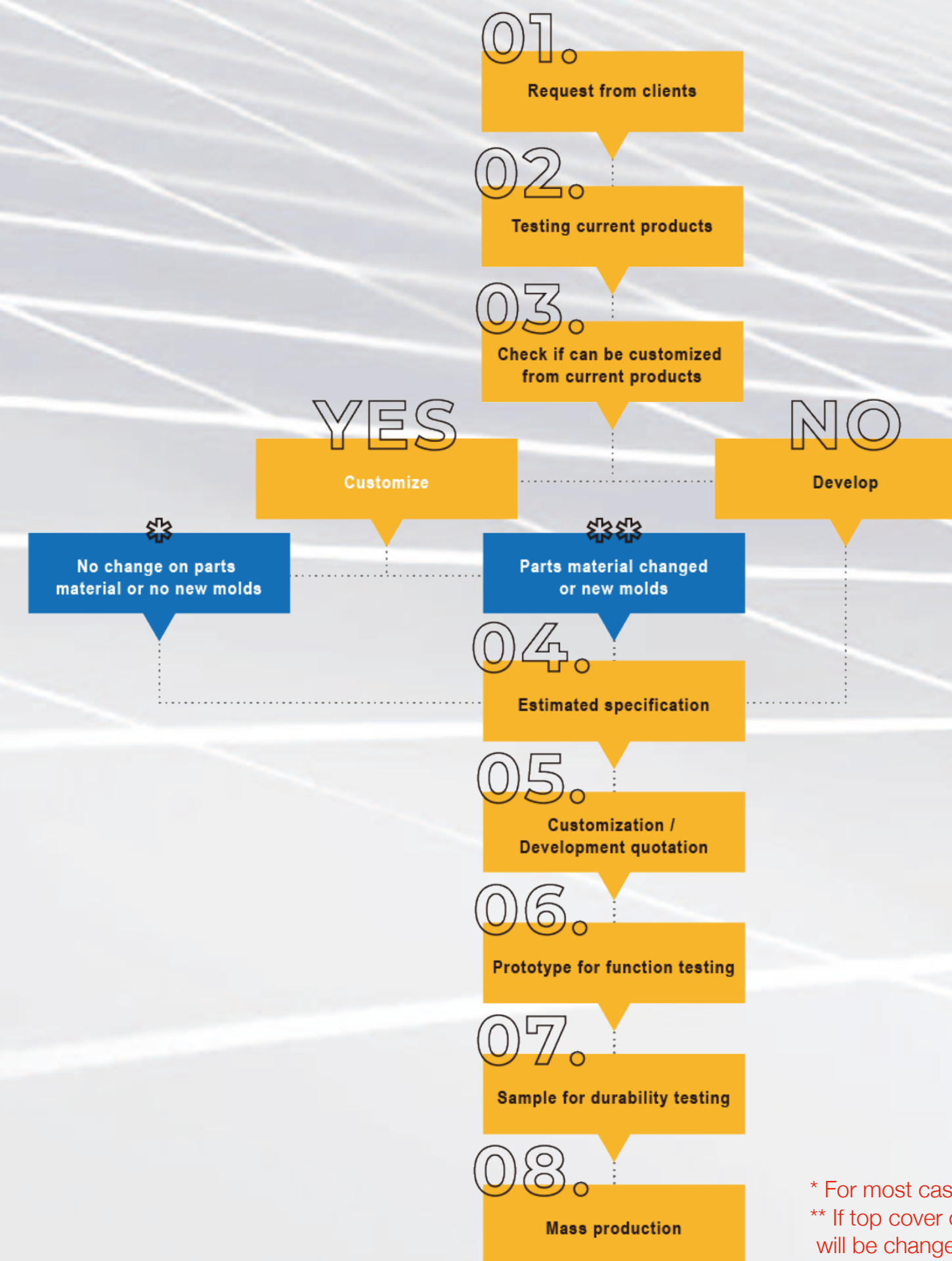
- ✓ OEM: OK
- ✓ ODM: OK

PCB & Controller Design

- ✓ PCB Design
- ✓ CAN/ 0-5V/ PWM
- ✓ Controller for other products

Development Service

- ✓ Customization based on current products
- ✓ Development according to request
- ✓ Water pump: OK
- ✓ Motor only: OK



* For most cases, no extra charge.
 ** If top cover changed, the flow rate and pressure will be changed at the same time.



Taiwan

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China

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聯絡人：吳信東 13580865620



Japan Sole Distributor



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