EPV Series Pump
Installation & Operating Instructions
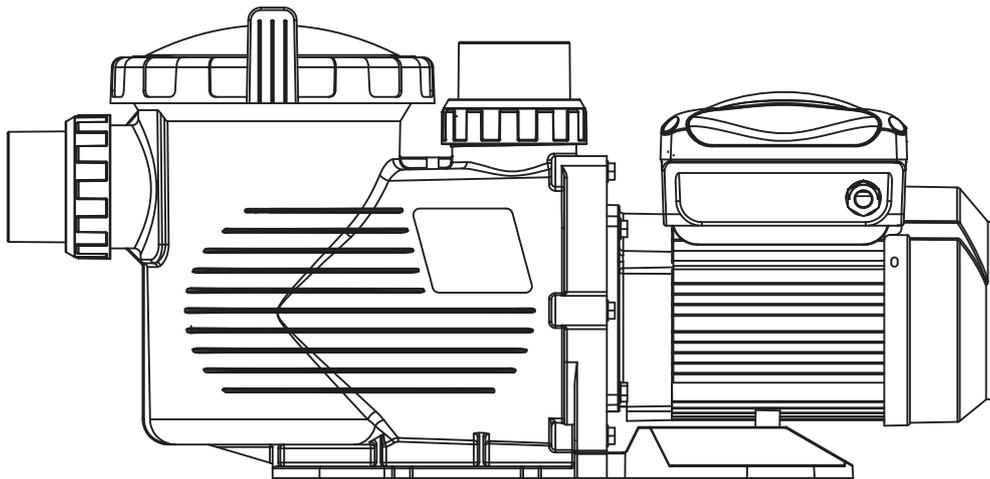
1. Pump Installation

➢ Please install on a level vibration free surface.
➢ Allow use of short, direct suction pipe. (To reduce friction losses & don't install the pump at more than 3M geometrical height from water level)
➢ Allow for gate valves in suction and discharge piping if required.
➢ Have adequate floor drainage to prevent flooding.
➢ Protect from excess moisture.
➢ Allow the adequate access for servicing pump and piping.

NOTICE:

Pump suction and discharge connections have molded in thread stops, DO NOT try to screw pipe in beyond these stops.

1.1 Operation

The pump is fitted with a wide range of settings to suit any filtration requirements.

The controller is used to program a range of motor speeds and settings described as "Schedules" in the program. To program the pump go to page 6 for easy description of how this is done.

NEVER run pump dry! Running pump dry may damage seals, causing leakage and flooding! Fill pump with water before starting motor.

➢ Before removing lid:
➢ STOP PUMP before proceeding.
➢ RELEASE ALL PRESSURE from pump and piping system.
➢ NEVER tighten or loosen screws while pump is operation.
➢ Do not block pump suction!

1.2 Priming Pump:

➢ Release all air from filter and piping system: see filter owner manual.
➢ In a flooded suction system (water source higher than pump), pump will prime itself when suction and discharge valves are opened.
➢ If pump is not in a flooded suction system, unscrew and remove pump lid and fill with water.

**NOTICE: Tighten pump lid by hand only.**

2. User's Guide

2.1 Overview

Functions of the controller is shown below：

➢ **Time:** Built in time clock.
➢ **Speed Display:** Expressed in RPM. Shows the operating speed.
➢ **Preset pump speed**: four optional preset running speeds available.
➢ **Display:** Time, four preset running speeds, power, Schedule settings and fault codes.

2.2 Controller's outlook display
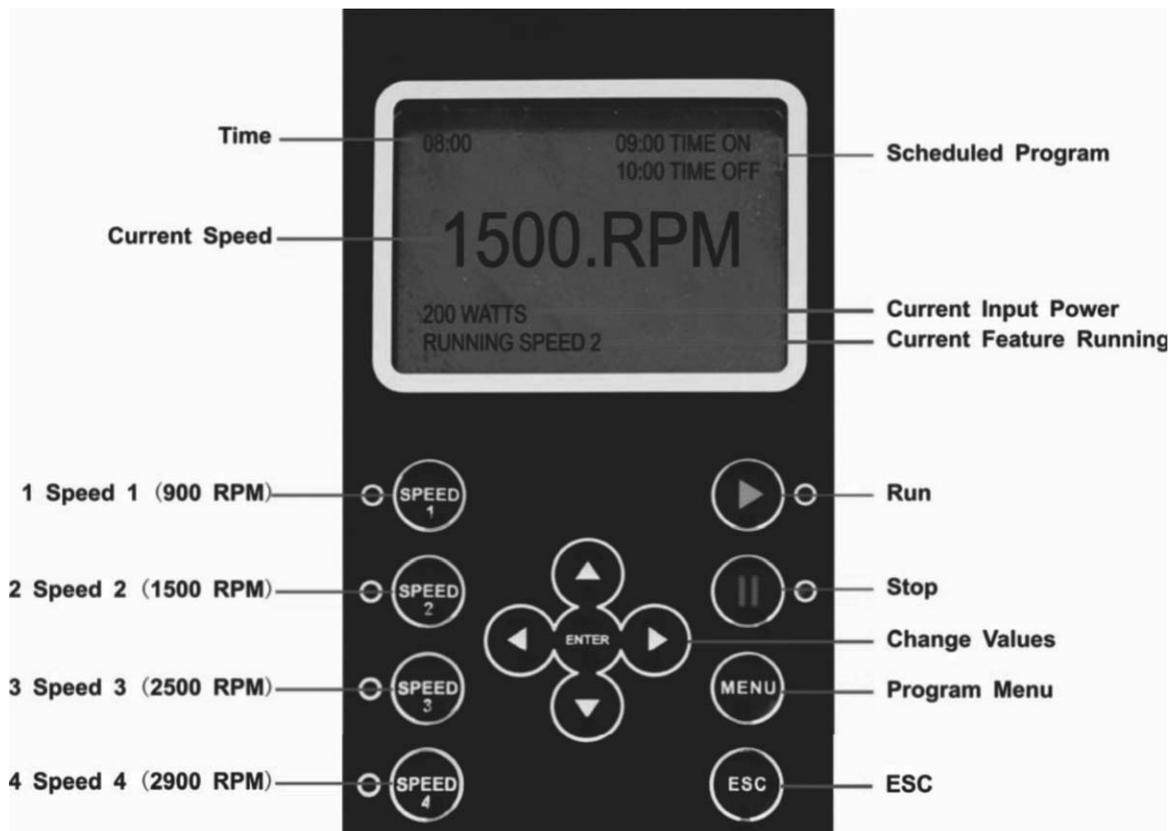
LCD Display backlight will switch off after 60 seconds if no button is pressed. The LCD backlight can be turned on again by pressing any button.

2.3 Controller Display
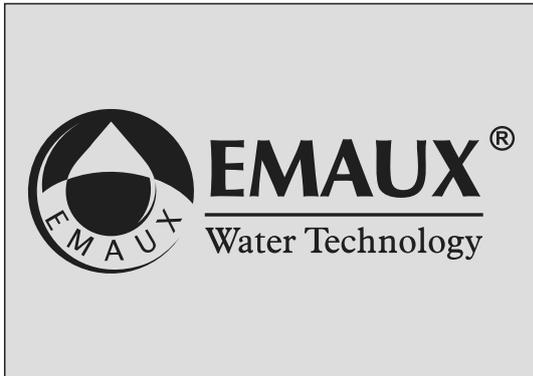
Turn on interface display

```
12 : 00

      0 RPM
0. W
  Speed 2
```
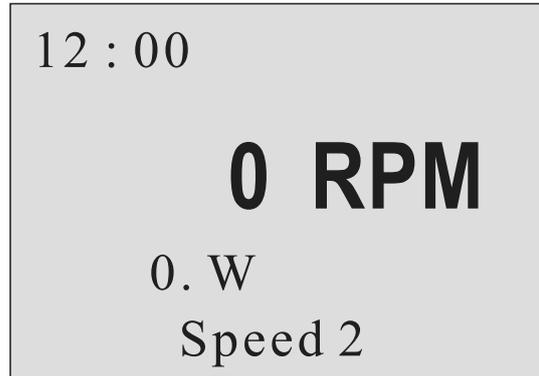
Static interface display

```
12 : 00

 1500 RPM
   210. W
Running Speed 2
```
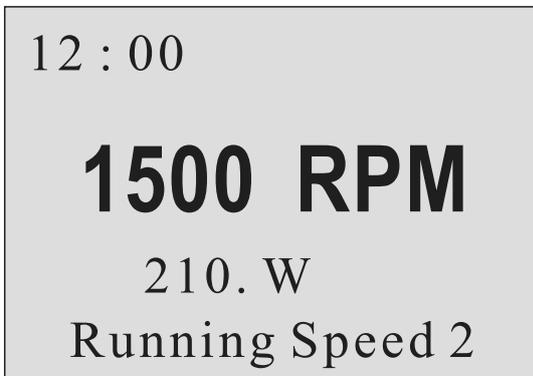
Normal operating interface display

```
COMM
ERROR
```
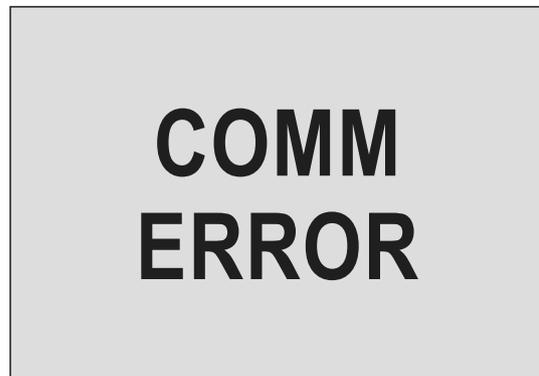
Communication error interface display

```
FAULT CODE:

   UV
```

Fault interface display

```
   SETTINGS

1. Time
2. Speeds
3. Schedules
```
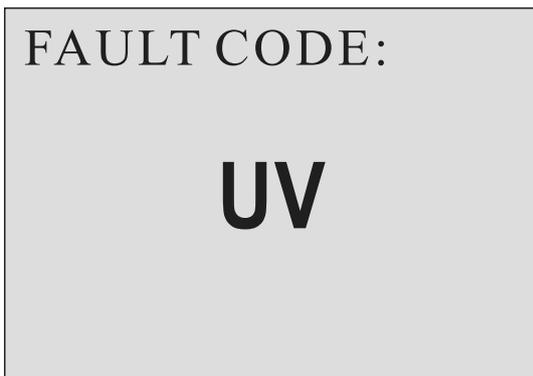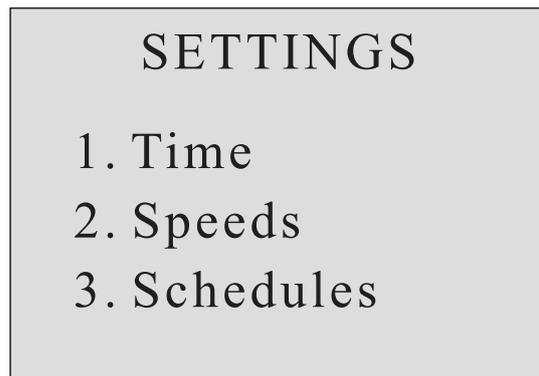
Parameter setting interface display

Description of Controls

Buttons	Name	Function
▲	**Increase**	Press this button to adjust（increase）the setting；
▼	**Decrease**	Press this button to adjust（decrease）the setting；
◀	**Left**	Move the cursor keys (select unit,Loop display);
▶	Right	Move the cursor keys (select unit,Loop display);
ENTER	**Enter**	Entre sub-menu, speed setting adjusting mode or save speed setting;
SPEED 1	**Speed1**	Press this button to select the required preset motor speed, LED next to the button switches on
SPEED 2	**Speed2**	Press this button to select the required preset motor speed，LED next to the button switches on
SPEED 3	**Speed3**	Press this button to select the required preset motor speed，LED next to the button switches on
SPEED 4	**Speed4**	Press this button to select the required preset motor speed，LED next to the button switches on
▶	**Start**	Press this button to start the motor，LED next to the button switches on；
❚❚	**Stop**	Press this button to stop the motor，LED next to the button turns red；Drive fault reset key；
MENU	**Menu**	Press this button to enter the parameter adjustment menu when the motor is not operating
ESC	**ESC**	Back/Cancel；

2.4 Programming

2.4.1 Internal system clock.

An internal system clock is used to maintain programmed operating conditions. If power supply is disconnected, the memory & programmed features will be maintained for approximately 7 days. Clock re-set may be required after this time.

2.4.2 Internal Speed (RPM) Adjustments.

There are 4 speed settings available.

To set speed settings, pump must be in the off position.

- ➢ Press Menu button.
- ➢ Press the buttons marked with an Up or Down arrow to highlight the "2.speeds" on the menu.
- ➢ Press Enter to show 1 to 4 speed settings.
- ➢ Move buttons marked with an Up or Down arrow to highlight a particular (RPM) speed.
- ➢ Press Enter over a highlighted setting, to show the set speed. Adjust that speed by using the Up or Down buttons.
- ➢ Press Enter to save that setting or press ESC to escape and not save setting.

2.4.3 Programmed Schedule.

Pump is supplied with a de-fault setting to enable easy installation. This can be altered to suit an individual requirement.

See Flow chart on Page 11.

There are four options available should the customer wish to change the de-fault settings.
The same method of programming applies to all 4 programs.

"Function"   Schedule setting Enable or Disable.

"Time On"   Sets the in-built timer to ON position.

"Time off"   Sets the in-built timer to OFF position.

"Speed"   Sets the programmed speed (RPM).

Ensure pump is in off position before changing program.

2.4.4 Programming Schedule 1
Function

- ➢ To Inspect/change "Function" setting.
- ➢ Press Menu, this highlights the settings.
- ➢ Using Up/Down buttons go to Schedules.
- ➢ Press Enter.
- ➢ Move Up/Down buttons and go to Schedules (1 to 4 Listed)
- ➢ Press Enter.
- ➢ Function title will be highlighted.
- ➢ Press enter to change setting from Disable/ Enable using the Up/Down buttons.
- ➢ Press Enter to Save OR press ESC to escape and not save.
- ➢ Press ESC to exit function setting.

Time On

> ➢ To Inspect/change "Time On" settings within Schedules 1
> ➢ Move Up/Down buttons to highlight Time on setting.
> ➢ Press Enter to show time.
> ➢ Highlight Minutes & Hours by using Enter & Left/Right buttons.
> ➢ Change time by moving Up/Down buttons.
> ➢ Press Enter to Save OR press ESC to escape and not save.
> ➢ Press ESC to exit "Time On" setting.

Time Off

To Inspect/change "Time Off" settings within Schedule 1

> ➢ Move Up/Down buttons to highlight Time on setting.
> ➢ Press Enter to show time.
> ➢ Highlight Minutes & Hours by using Enter & Left/Right buttons.
> ➢ Change time by moving Up/Down buttons.
> ➢ Press Enter to Save OR press ESC to escape and not save.
> ➢ Press ESC to exit "Time Off" setting.

Programming Schedules 2, 3 & 4 are the same as programming Schedule 1.

2.4.5 Variable Speed Adjustment.

There are 7 options available.

"Function"   Turns the Variable Speed Function on or off.

"Time On"   Sets the in-built timer to ON position.

"Time off"   Sets the in-built timer to OFF position.

"Min Speed"   Sets the minimum speed (RPM) setting.

"Max Speed"   Sets the maximum speed (RPM) setting.

"Step"   Sets the RPM in "steps" when changing speed settings.

"Rhythm"   Sets the time frame for water flow to change.

The 'Step" & Rhythm" settings are particularly useful if a pool feature like a waterfall is installed and you want the water flow to change over time to give a visual effect, for example: a cascading waterfall.

Ensure pump is in off position before changing program.

Press Menu, this highlights the settings.
Using Up/Down buttons go to Variable Speed
Press Enter.

Method of adjustments to above parameters is the same as entering the settings described in Schedule 1.

2.4.6 Language setting.

1) In static condition, press MENU to enter the setting interface；

2) Press Increase or Decrease to select "Language"；

3) Press ENTER to enter the "Language" setting interface, the symbol">"indicates the current display language；

4) Press ENTER again to enter the editing mode, press Increase or Decrease to select the display language that is wished to be set；

5) Press ENTER to save the setting, the selected language will be shown on the display interface immediately.press ESC to exit the editing mode if the preset is not wished to be save；

6) Press ESC to return.

2.4.7 No Flow Settings.

Note: Only operates when motor is running above 1800RPM.

There are 3 options available.

"Function"   Will Enable or Disable the No-Flow settings.

"Alarm Time"   Sets the time frame for the No-Flow Protection circuit to operate. Minimum setting is 5 minutes.

"Sensitivity"   Sensitivity of protection system, expressed in %.Minimum setting is 0.01%

Fault Code "NF" will be shown if No Flow Protection System is activated.

Ensure pump is in off position before changing program

Press Menu, this highlights the settings.
 Using Up/Down buttons go to Variable Speed
Press Enter.

Method of adjustments to above parameters is the same as entering the settings described in Schedule 1.

2.4.8 Pump Priming Cycle.

There are 3 options available.

"Function"   Pump Priming function enabled or disabled.

"Priming Time"   Time pump is allowed to prime before going to other speed settings.

"Priming Speed"   Set speed for pump to operate during priming cycle.

Ensure pump is in off position before changing program.

Press Menu, this highlights the settings.
Using Up/Down buttons go to Variable Speed
Press Enter.

Method of adjustments to above parameters is the same as entering the settings described in Schedule 1.

Pump priming time settings.   Minimum time is 1 minute.

Maximum time is 20 minutes.

Default time is 2 minutes.

Pump Priming Speed.   Minimum speed is 2900RPM.

Maximum speed is 3400RPM

Default speed is 2900RPM.

2.5 Factory Default Settings.

This enables you to reset all the default factory settings.

2.5.1 Pump Internal Memory Features.

If the electrical supply to the pump is disconnected, the programmed de-fault settings are maintained for approximately 7 days.

2.5.2 Internal system clock.

An internal system clock is used to maintain programmed operating conditions. If power supply is disconnected, the memory & programmed features will be maintained for approximately 7 days.

Clock re-set may be required after this time.

2.5.3 Internal Speed (RPM) Adjustments.

There are 4 speed settings available.

To set speed settings, pump must be in the off position.

- ➢ Press Menu button.
- ➢ Press the buttons marked with an Up or Down arrow to highlight the "2.speeds" on the menu.
- ➢ Press Enter to show 1 to 4 speed settings.
- ➢ Move buttons marked with an Up or Down arrow to highlight a particular (RPM) speed.
- ➢ Press Enter over a highlighted setting, to show the set speed. Adjust that speed by using the Up or Down buttons.
- ➢ Press Enter to save that setting or press ESC to escape and not save setting.

2.5.4 Programming Flow Chart

```
MAIN SCREEN ──── Press Menu button to access SETTINGS

SETTINGS ─── Time ─── (hr:mm)

            Speeds ─── Speed 1 ─── (800 - 3400RPM) - Default:  0900 RPM
                       Speed 2 ─── (800 - 3400RPM) - Default:  1500 RPM
                       Speed 3 ─── (800 - 3400RPM) - Default:  2500 RPM
                       Speed 4 ─── (800 - 3400RPM) - Default:  2900 RPM

            Schedules ─── Schedule 1 ─── Function ─── Enabled / Disabled - Default: Disabled
                                         Time On ─── (hr:mm) - Default:  08:30
                                         Time Off ─── (hr:mm) - Default:  11:30
                                         Speed ─── (1 - 4) - Default:  1
                          Schedule 2 ─── Function ─── Enabled / Disabled - Default: Disabled
                                         Time On ─── (hr:mm) - Default:  14:30
                                         Time Off ─── (hr:mm) - Default:  17:30
                                         Speed ─── (1 - 4) - Default:  1
                          Schedule 3 ─── Function ─── Enabled / Disabled - Default: Disabled
                                         Time On ─── (hr:mm) - Default:  19:30
                                         Time Off ─── (hr:mm) - Default:  21:30
                                         Speed ─── (1 - 4) - Default:  1

            Variable Speed ─── Function ─── Enabled / Disabled - Default:  Disabled
                               Time On ─── (hr:mm) - Default:  07:30
                               Time Off ─── (hr:mm) - Default:  18:30
                               Min Speed ─── (800 - 3400RPM) - Default:  0900 RPM
                               Max Speed ─── (800 - 3400RPM) - Default:  2900 RPM
                               Step ─── (10 - 500RPM) - Default:  100 RPM
                               Rhythm ─── (0.5 - 9.9s) - Default:  1.0s

            Language ─── English / Chinese - Default:  English

            No Flow ─── Function ─── Enabled / Disabled - Default:  Disabled
                        Alarm Time ─── (5 - 30min) - Default:  10 min
                        Sensitivity ─── (1 - 100%) - Default:  001%

            Priming ─── Function ─── Enabled / Disabled - Default:  Enabled
                        Priming Time ─── (1 - 20min) - Default:  2 min
                        Priming Speed ─── (2900 - 3400RPM) - Default:  2900 RPM

            Reset ─── Yes
```

3.Replacement Parts

3.1 Parts Diagram
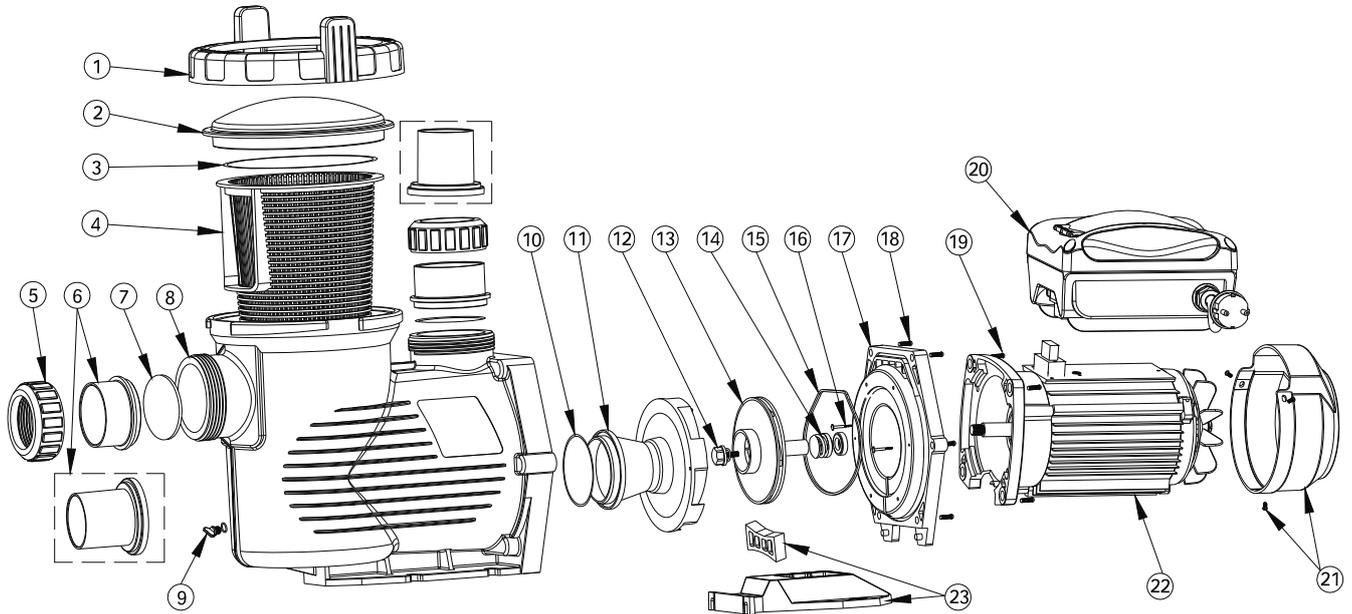
3.2 Parts Listing

Item NO.	Part Number	Product Description	QTY	Unit
1	01020016	Nut for lid	1	Pc
2	01041049	Transparent Lid	1	Pc
3	02010042	O-Ring for lid	1	Pc
4	01110024	Basket	1	Pc
5-7	89020721	2.5" Union With O-ring	2	Set
5-7	89020722	2"Union With O-ring	2	Set
8	01020015	Pump body	1	Pc
9	89021307	Drain Plug With O-ring	2	Set
10	02010213	O-Ring	1	Pc
11	01110025	Diffuser	1	Pc
12	89020719	Screw for impeller with O-ring	1	Set
13	01311057	Impeller EPV100	1	Pc
	01311058	Impeller EPV150	1	Pc
	01311047	Impeller EPV200	1	Pc
	01311052	Impeller EPV300	1	Pc
14	04015032	3/4″ Mechanical seal	1	Set
15	02010212	O-Ring for flange	1	Pc
16	03011201	M3.5×35 Screw	2	Pc
17	01020017	Flange	1	Pc

18	89020720	M8*35 Screw with Washer for motor	6	Set
19	03011075	M8*30 Screw	4	Set
20	89023701	Controller For EPV100	1	Set
	89023702	Controller For EPV150	1	Set
	89023703	Controller For EPV200	1	Set
	89023704	Controller For EPV300	1	Set
21	01321024	Fan Cover	1	Pc
22	04020102	EPV100 TYC-80S motor	1	Set
	04020103	EPV150 TYC-80M motor	1	Set
	04020104	EPV200 TYC-80L motor	1	Set
	04020105	EPV300 TYC-80XL motor	1	Set
23	01110026	Base	1	Pc
	02010211	Arch Cushion for Base	1	Pc

3.3 Overall Dimension
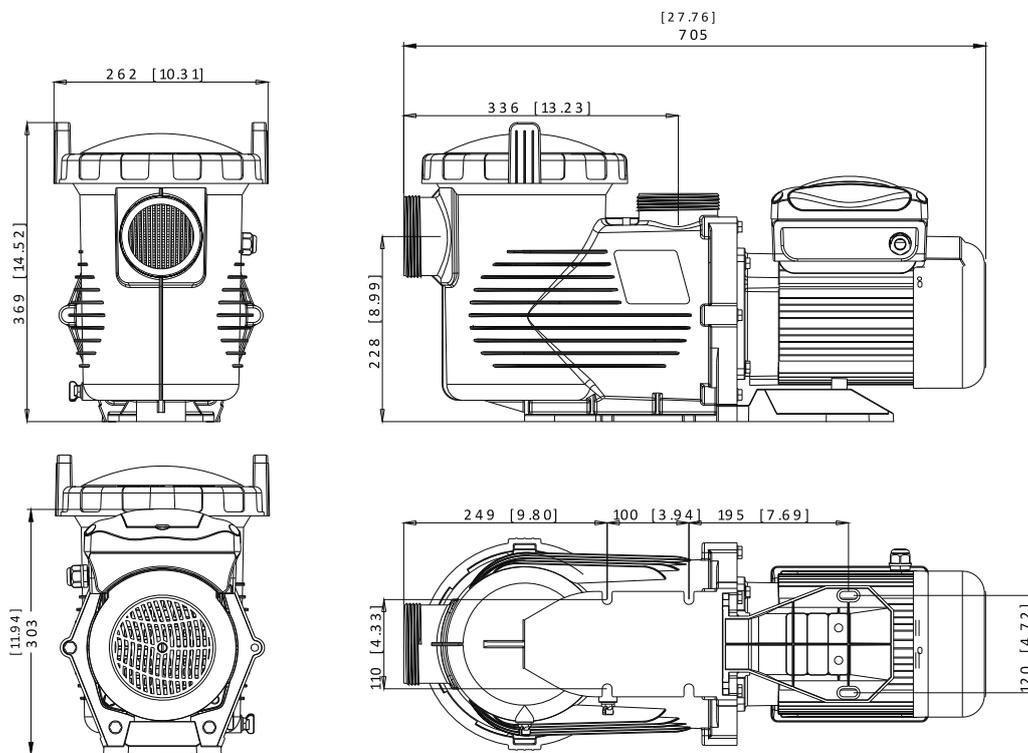
3.4 Product Information

Code 220V-240V 50Hz/60Hz	Model Code	Connection Size		Input Power (Max.)	Horsepower	Weight(kg)
88021105	EPV100	2 inch	2.5 inch	1.10kW	1.0hp	22.00
88021107	EPV150	2 inch	2.5 inch	1.50kW	1.5hp	23.00
88021108	EPV200	2 inch	2.5 inch	1.80kW	2.0hp	24.00
88021109	EPV300	2 inch	2.5 inch	2.20kW	3.0hp	25.00

4. Troubleshooting

4.1. Communication error

If there is a communication error inspect the following;

- ➢ Ensure the 3-pin plug is making good contact with power point.
- ➢ Reset system by turning off power supply, leave for 30 seconds then switch on pump again.
- ➢ If problem persist after checking the above points, contact your Emaux service agent

4.2. Error Display

When Programmable Controller is not working a fault code will be shown on the controller display.

Error	Info	Cause
OC	**Over Current:** Driver's output current exceeds the threshold (200% of rated current)	➢ Driver output failure ➢ Drive of IPM module is damaged
OV	**Over Voltage:** Main circuit DC voltage exceeds the threshold	➢ Over power of the power supply ➢ Power-supply voltage exceeds settings
UV	**Under Voltage:** The main electric current is too low	➢ Supply voltage fluctuation is too large
OH	**Overheating:** Heat sink on the motor overheating.	➢ Temperature in the surrounded environment is too high
NF	**No Water Flow:** Absent of water, no water current	➢ Water level in the pool is too low ➢ Not enough water in the basket when starting

4.3. Service Parts.

Refer all service to your local agent or dealer as his knowledge of your equipment makes him the best-qualified source of information. Order all repair parts through your dealer. Please give the following information when ordering repair parts:

- ➢ Unit nameplate data or serial number on label.
- ➢ Description of part.

4.4. Trouble Shooting Guide.

Pump Does Not Start.

- ➢ Check power supply is present.
- ➢ Check mains cord is plugged in.
- ➢ Fuses blown or thermal overload open
- ➢ Locked or Jammed motor shaft - Contact Service Agent.
- ➢ Motor windings burned out - Contact Service Agent.
- ➢ Disconnected or defective wiring.

Pump Does Not Reach Correct Speed.

- ➢ Low Voltage – Contact Service Agent.

Motor Overheating.

- ➢ Ensure adequate ventilation.

No or Poor Water Flow.

- ➢ Ensure pump is primed.
- ➢ Ensure there is no air entering suction side.
- ➢ Basket Full of Debris.
- ➢ Water Level in pool adequate.

Contact Your Local Service Agent for Further Assistance.