

IMPORTANT SAFETY, INSTALLATION, AND MAINTENANCE INFORMATION

This instruction manual contains basic information on the safety measures to be adopted during installation, maintenance and start-up. The fitter and the user must therefore read the instructions before installation and start-up.

The manual can be downloaded as a PDF file from the website: www.zodiac-poolcare.com



- The units described in this Manual are specially designed for the pre-filtering and recirculation of water in swimming pools.

- They are designed to work with clean water at temperatures that do not exceed 35 °C.



- All assembly, electrical installation and maintenance work must be carried out by qualified, authorized personnel who have carefully read the installation and service instructions.

- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.



- Our pumps may only be assembled and installed in pools that are compliant with standards IEC / HD 60364-7-702 and required national rules. Should you have any doubts please consult your dealer.

- The installation should follow standard IEC/HD 60364-7-702 and required national rules for swimming pools.

- The pump can not be installed in the Zone 0 and Zone 1. To see drawing refer to page 7.

- The pump is intended to be used while fastened to a support or while secured in a specific location in a horizontal position.

- See the maximum pump pressure (H max), in meters in page 5.

- A sump with an adequate outlet for the liquid is considered to be placed where flooding is likely to occur.

- If a self-priming pump is to be fitted above the water level, the pressure differential to the pump suction pipe should not be higher than 0.015 MPa (1,5 mH₂O). Ensure that the suction pipe is as short as possible as a longer pipe would increase suction time and the installation's load losses.

- This unit requires a qualified professional for its installation and a conditioned AC installation.
- The unit should be connected to an alternating current supply (see data on the pump's plate) with an earth connection, protected by a residual current device (RCD) with a rated residual operating current that does not exceed 30 mA.
- A disconnecter must be fitted to the fixed electrical installation in accordance to the installation regulation.



- Failure to abide by the warnings can cause serious damage to a pool's fixtures or serious injury, including death.

- Observe the regulations in force on accident prevention.

- Before handling the unit, ensure that the power supply is switched off and disconnected from the mains.

- If the unit breaks down, do not try to repair it yourself. Contact a qualified service engineer instead.

- All modifications to the pump require the manufacturer's prior authorization. Spare parts and original accessories authorized by the manufacturer ensure greater safety. The pump's manufacturer may not be held liable for any damage caused by unauthorized spare parts or accessories.

- Do not touch the fan or moving parts and do not place a rod or your fingers near the moving parts while the device is working. Moving parts can cause serious injury or even death.

- Do not dry-run the pump or without water (the warranty will become null and void).

- Do not do any maintenance or repair work on the device with wet hands or if the device is wet.

- To not submerge the device in water or mud.

- Pumps without indication that they are protected against freezing shall not be left outside during freezing conditions.

1. GENERAL SAFETY INSTRUCTIONS

These symbols (  ) indicate the possibility of danger where the corresponding instructions are not followed.



DANGER - Risk of Electrocution

Failure to abide by these instructions may lead to the risk of electrocution.



DANGER

Failure to abide by these instructions may lead to the risk of injury to people or damage to property.



WARNING

Failure to abide by these instructions may lead to the risk of damage to the pump or the installation.

2. OVERVIEW OF THE SYSTEM

Before starting, check that you have all of the parts shown in Figure 1.

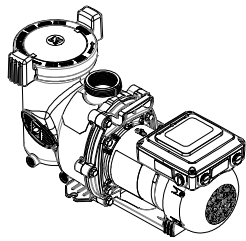
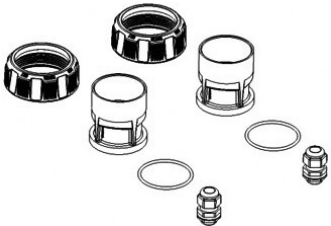
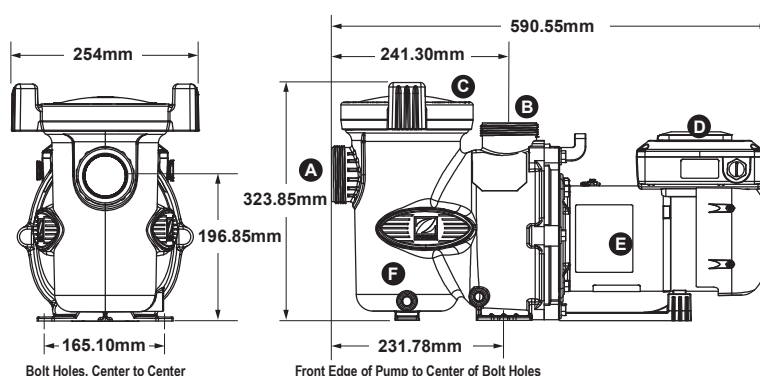
TABLE 1 - CONTENTS	
	
E30iQ Pump	Union Nut, tailpiece, O-ring, cable gland (qty 2 each)

TABLE 2 - SPECIFICATIONS			
	Unit	E30 iQ 100	E30 iQ 200
Operating Water Temperature		2 to 35°C	
Nominal Voltage of Motor		230 VAC-50 Hz	
Motor Power - Phase		1P	
Admissible Variation in Motor Voltage		± 10% (during operation)	
Maximum Power at Motor Input (P1)	W	1097 (at105%)	1790 (at105%)
Maximum Motor Amperage	A	7.8	12
Cable Cross-Section	mm ²	3x1.5	
	Lug Type	3G1.5	
Electrical Protection	A	10	16
Fuse		10A 5x20mm	16A 5x20mm
Motor Protection Rating		IPX5	
Maximum Pump Flow	m ³ /h	23	34
Pump Flow Rate at 10m of Head	m ³ /h	15,4 (at100%)	25 (at 100%)
Pump Flow Rate at 8m of Head	m ³ /h	17,3 (at 100%)	27,3 (at 100%)
H Max	mH2O	18	20,4
Maximum Pump Pressure	bar	1,8	2,04
Pump Pipe Connection		2" threaded suction/discharge Ø63/50 mm union couplings	
Maximum Pump Salinity		6g/L (6000 ppm)	

TABLE 3 - Maximum Suction Rate

Pipes	Max. Suction Rate at 1.7m/sec	Max. Suction Rate at 2.4m/sec
50mm	14m ³ /h	19m ³ /h
63mm	20m ³ /h	27m ³ /h

TABLE 4 - DIMENSIONS AND MARKINGS



A	B	C
Water Inlet	Water Outlet	Lid
D	E	F
User Interface	Pump Motor	Drains

NOTE When installing a pump, leave a minimum of thirty (30) cm of clearance above the pump for removal of the strainer basket.

TABLE 5 - PERFORMANCE CURVES

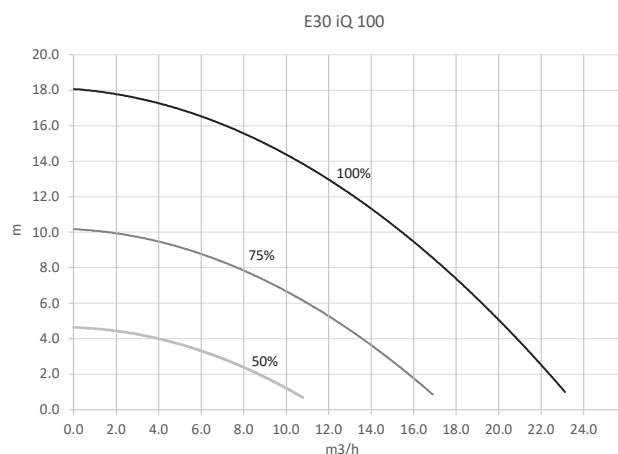
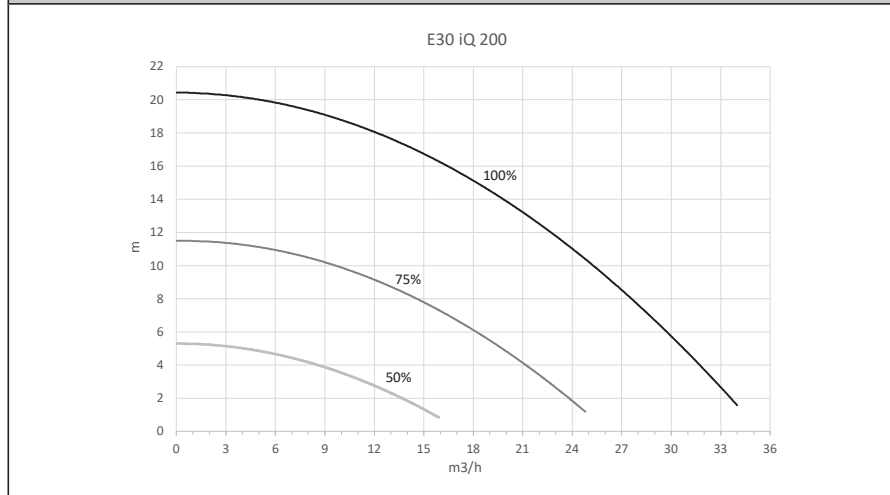


TABLE 5 - PERFORMANCE CURVES



3. INSTALLATION

3.1 SELECTING A LOCATION

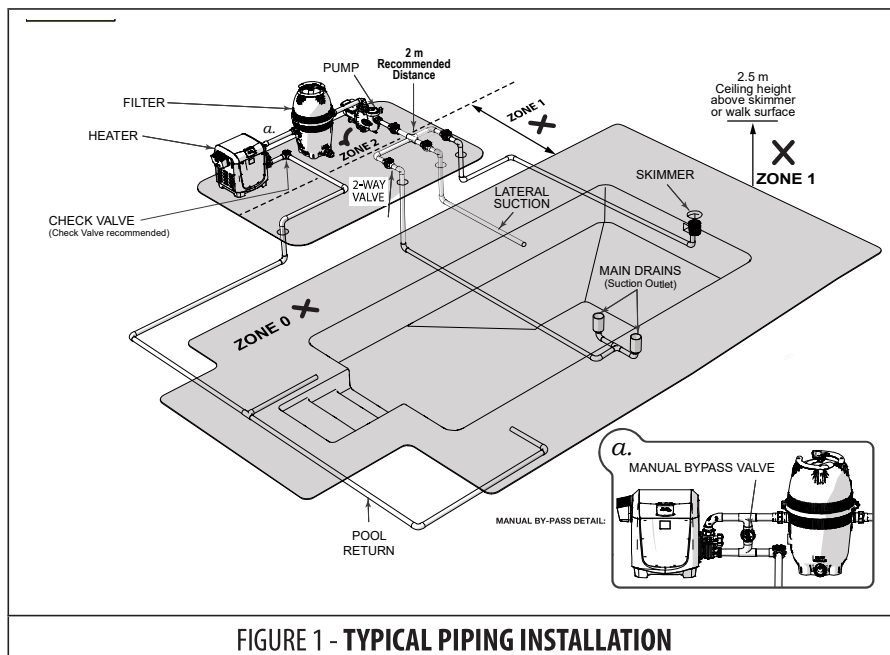


FIGURE 1 - TYPICAL PIPING INSTALLATION

- Install the pump within three hundred millimetres (300mm) above water level and 2 metres (2m) away from the edge of the pool to protect from water. Consult the standards in force in the country of installation to verify the correct distance.
- The pump should not be elevated more than one metre (1m) above the water level of the pool.
- A check valve is recommended on the suction and return line of the pump if the pump is located below the water level.

3.2 HYDRAULIC CONNECTIONS

INSTALLATION RECOMMENDATIONS



- Observe the direction of the hydraulic connections.
- Install isolation valves on both the suction and return lines for a pump located below water level.
- E30 iQ Pumps come equipped with unions on both the suction and discharge ports.
- The piping must be well supported and not forced together where it will experience constant stress.
- Always use properly sized valves.
- Use the fewest fittings possible. Each additional fitting has the effect of moving the equipment farther away from the water.

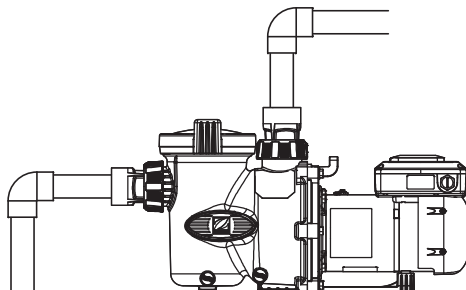


- To Reduce the Risk of Fire, install pool equipment in an area where debris will not collect on or around the equipment. Keep surrounding area clear of all debris such as paper, leaves, pine needles, and other combustible materials.



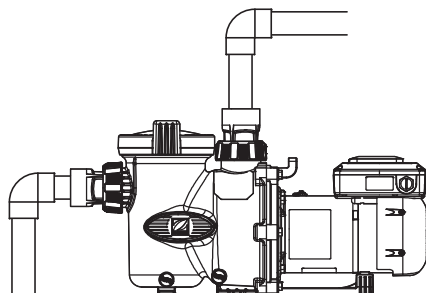
- In order to prevent premature failure or damage to the pump motor, protect the pump from direct water exposure from sprinklers, water runoff from rooftops and drainage, etc. Failure to comply may cause pump failure and may void the warranty.

NOTE If more than ten (10) suction fittings are needed, the pipe size must be increased.



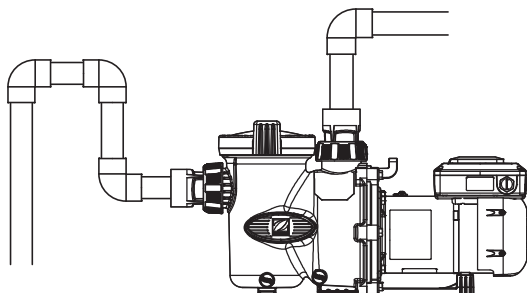
Length of the suction pipe = $4 \times \varnothing$

FIGURE 2 - **CORRECT INSTALLATION**



Suction pipe too short. **Risk of cavitation**

FIGURE 3 - **INCORRECT INSTALLATION**



Air entrapment. **Risk of the strainer not filling properly**

FIGURE 4 - **INCORRECT INSTALLATION**

3.3 POWER CONNECTIONS



- Always disconnect the power source before working on a motor or its connected load.
- Only a qualified and experienced technician is authorised to carry out any service, including cabling work within the appliance.
- To prevent overheating of the terminal board, which could create a fire hazard, check that all terminals have been properly tightened. Loose terminals will void the warranty.
- The appliance must connect to the Earth.
- Any unsuitable electrical connection will invalidate the warranty.

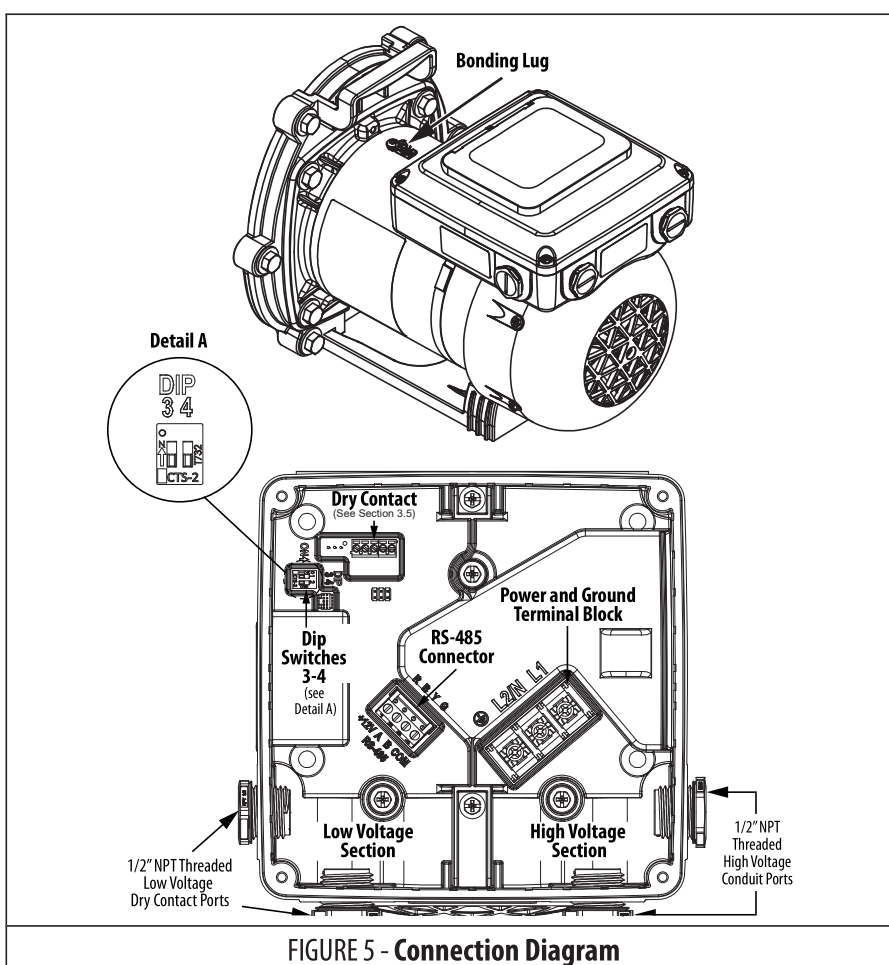


FIGURE 5 - Connection Diagram

VOLTAGE CHECKS

Install the pump per the correct voltage as specified on the pump data plate.

ELECTRICAL CONNECTIONS

- The E30 iQ pump provides a wiring compartment that is divided into a section for high voltage and a section for low voltage.
 - The low voltage section provides two 1/2" NPT conduit ports (threaded) (see Figure 5).
 - The high voltage section provides two 1/2" NPT conduit ports (threaded).
- Secure the pump using the green screw provided. Ground before attempting to connect to an electrical power supply. Do not ground to a gas supply line.
- Wire size must be adequate to minimize voltage drop during the start-up and operation of the pump.
- Insulate all connections carefully to prevent grounding or short-circuits. Sharp edges on terminals require extra protection. For safety, and to prevent entry of contaminants, reinstall all conduit and terminal box covers. Do not force connections into the conduit box.

NOTE When power alone is supplied to this pump, it will not operate. It requires a digital command sent to it by either a variable speed controller, an automation system, or use of the dry contacts (See Figure 6).

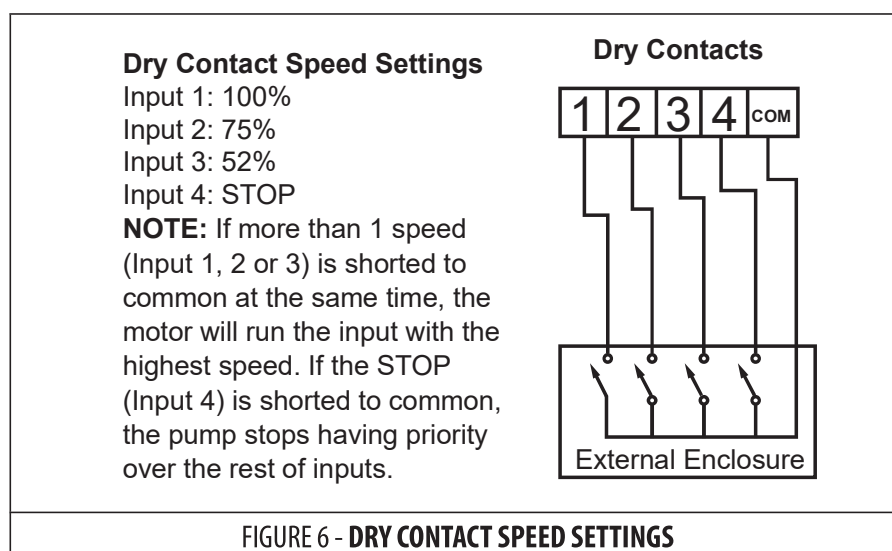
3.4 PUMP DIP SWITCH SETTINGS

- The motor is equipped with an auto sensing power circuit which eliminates the need for DIP switches 1 and 2. See Figure 3.
- DIP switches 3 and 4 must remain in the OFF position when the controller is connected.
- These pumps support auto-addressing. If connecting to an automation system, please refer to your automation system's manual to determine autoaddressing capability.
- If using DIP switches to set pump address, please refer to Table 6 for DIP switches 3 and 4 settings.

TABLE 6 - DIP SWITCH SETTINGS		
SWITCH 3	SWITCH 4	PUMP ADDRESS
OFF	OFF	PUMP 1 (Factory Default)
ON	OFF	PUMP 2
OFF	ON	PUMP 3
ON	ON	PUMP 4

3.5 DRY CONTACT OPERATION

- An external relay or switch wired to the dry contacts can be used as a controller to operate the pump if the controller is not connected to the RS-485 line.
- By connecting one of the inputs to common via an external, non-electrified relay, it will turn on the pump, prime at 100% for 3 minutes, and then go to a pre-determined speed indefinitely until the circuit is broken (See Figure 6). If no inputs are jumped to common, the speed is zero.
- These speed settings cannot be changed. When any controller is connected through RS-485, all dry contact commands will be ignored.



3.6 CONDUCT PRESSURE TESTING



- When pressure testing a system with water, air is often trapped in the system during the filling process. This air will compress when the system is pressurized. Should the system fail, this trapped air can propel debris at a high speed and cause injury. Every effort to remove trapped air must be taken, including opening the valve on the filter and loosening the pump basket lid while filling the pump.



- Trapped air in the system can cause the filter lid to be blown off, which can result in death, serious injury, or property damage. Be sure all air is properly purged out of the system before operating. **DO NOT USE COMPRESSED AIR TO PRESSURE TEST OR CHECK FOR LEAKS.**



- **ELECTRICAL SHOCK HAZARD** - Do not pressure test above 2.4 Bar. Pressure testing must be done by a trained pool professional. Circulation equipment that is not tested properly might fail, which could result in severe injury or property damage.



- When pressure testing the system with water, it is very important to make sure that the pump basket lid is completely secure.
- Fill the system with water, using care to eliminate trapped air.
- Pressurize the system with water to no more than 2.4 Bar (241 kPa).
- Close the valve to trap pressurized water in the system.
- Observe the system for leaks and/or pressure decay.

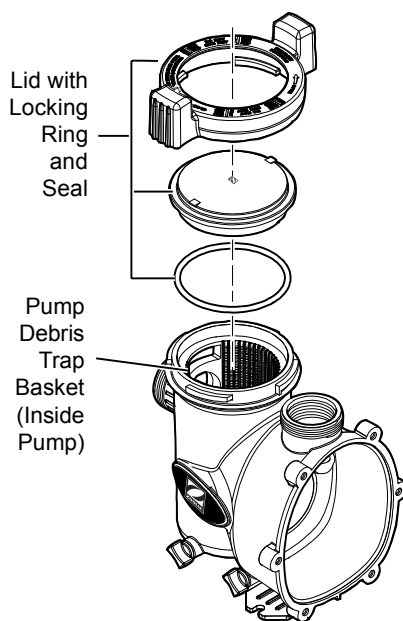


FIGURE 7 - EXPLODED VIEW OF LID ASSEMBLY

4. USE

4.1 START-UP



- Never run the pump without water. Running the pump “dry” for any length of time can cause severe damage to both the pump and motor and will void the warranty.
- If this is a new pool installation, make sure all piping is clear of construction debris and has been properly pressure tested.
- The filter should be checked for proper installation, verifying that all connections and clamps are secure according to the manufacturer’s recommendations.



- To avoid risk of property damage, severe personal injury or death, verify that all power is turned off before starting this procedure.

1. Release all pressure from the system and open the filter pressure release valve.
2. Depending on the location of the pump, do one of the following:
 - If the pump is located below the water level of the pool, open the filter pressure release valve to prime the pump with water.
 - If the pump is located above the water level of the pool, remove the lid and fill the basket with water before starting the pump.
3. Check for debris around the lid o-ring seat before replacing the lid.
4. Hand-tighten the lid to make an air tight seal.
5. Restore power to the pump.
6. Once all the air has left the filter, close the pressure release valve.
7. The pump should prime. The time to prime depends on elevation and pipe length used on the suction supply pipe.
8. If the pump does not prime and all the instructions to this point have been followed, check for a suction leak. If there is no leak, repeat Steps 2 through 7.
9. For technical assistance, call Zodiac Technical Support at zodiac.com.

PUMP BELOW WATER LEVEL

1. Ensure the pump lid is secure by verifying the “locked” indicators are aligned with the pump’s ports. Hand tighten only, do not use tools. Make sure valves are open and the pump unions are tight.
2. Open any isolation valves that may be in place between the pump and the pool’s main drain(s) and skimmer(s).
3. Open the air relief valve on the filter. This will allow air to begin to escape the system and fill the pump with water for priming.
4. Restore power to the pump and start the pump.
5. When water starts to come out of the air relief valve on the filter, close the air relief valve.
6. Inspect system for any leaks.

PUMP ABOVE WATER LEVEL

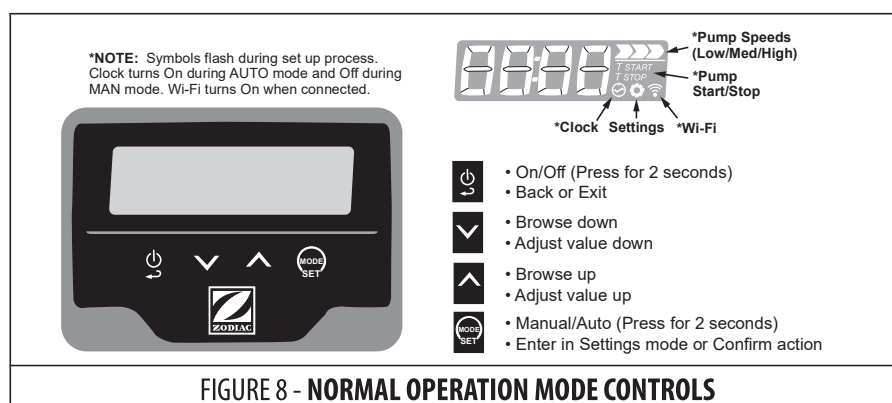
1. Open the air relief valve on the filter.
2. Remove the pump lid and fill the basket with water.
3. Check for debris around the lid o-ring seat before replacing the lid.
4. Tighten the lid by verifying the "locked" indicators on the lid are aligned with the pump's ports. Hand tighten only, do not use tools. Make sure all valves are open and the pump unions are tight.
5. Restore power to the pump and start the pump.
6. Once the pump has primed and water comes out of the air relief valve on the filter, close the air relief valve and inspect the system for any leaks.

NOTE All pumps in this manual are NSF-certified as being able to prime at heights up to 3m above the pool water level, at sea level. However, to achieve better self-priming, install the pump as close as possible to the water level of the pool.

4.2 OPERATIONAL CONTROLS

IMPORTANT

Due to an undervoltage protection placed in the software to protect the internal electronics, there may be an error during motor startup. If this situation occurs, simply let the motor sit without power for approximately 3-5 minutes to allow the capacitors to completely drain before restarting the motor.



NOTE If power is removed, motor will return to the last speed selected when power is restored. Motor will remember ON/OFF states. If there is a fault, Error LED will blink and display will show an error number. See Section 6 more information on fault codes.

Pump Functions

- Display Lock/Unlock - Press and simultaneously for 2 seconds. Display will show "Loc" or "uLoc".
- Pump Power ON/OFF - Press for 2 seconds.
- Speed Selection - Low/Medium/High (Press or in Manual Mode)

Mode

This selection allows user to select a mode running the pump at a continuous speed (Off) or one which creates individual schedules for the pump (On).

NOTE Press  for 2 seconds to toggle between AUTO ON and OFF (Manual).

- Manual (Off) - Continuous operation at a fixed speed;
- Auto (On) - Schedule to run the pump at different speeds and periods of time;

Auto ON

- Pump works according to schedule
- Speed adjustment is unavailable
- Display information alternates between timer used, speed and hour.

Auto OFF (MANUAL Mode)

- Pump remains at continuous speed and speed shows as numbered %.
- Change speed setpoint manually with Pump Speed icon showing chosen speed ( - Low,  - Medium,  - High).

Settings

Pump settings can be modified during or outside of the pump's operating period.

NOTE  at end will return to the top of the menu list.

- **Setting options in MANUAL Mode**
 - Low speed setpoint -  icon will flash during process.
 - Medium speed setpoint -  icon will flash during process.
 - High speed setpoint -  icon will flash during process.
 - Priming Speed
 - Priming Time
 - REST (restore)
- **Setting options in AUTO Mode**
 - Time - Clock  icon will flash during process.
 - Timer (P1 to P6) - T-Start or T-Stop icons will flash during process.
 - REST (restore) -
- **Wi-Fi** - W-Fi  icon will flash during process.

Setting Browsing

NOTE Press  to return to the Main Menu, and  and  to scroll through the menu.

- **Time**
 1. Press  to enter Settings menu.
 2. Press  or  until "Hour" displays.
 3. Press  to change time.
 4. Press  or  to select desired time.

NOTE Pressing either button down will change the time more rapidly.

5. Press  to confirm.

NOTE More than one (1) minute of inactivity will confirm selection automatically. If ON/OFF is pressed before entering a time, all changes will be lost.

• **Timer**

NOTE The highest speed will have priority between timers.

1. Press  to enter Settings menu.
2. Press  or  to move through six (6) timers (P1 - P6).
3. Press  for selected timer to modify the selection.
4. With  flashing, press  or  to change the speed selection. Initial speed will be Low unless a previous speed is saved.
5. Press  to enter speed.
6. With T-Start flashing, press  or  to enter the start time.
7. Press  to enter start time.
8. With T-Stop flashing, press  or  to enter the stop time.
9. Press  to enter stop time.
10. "En" (Enabled) will appear in the display by default. Press  until "Dis" appears in the display to disable and  to confirm. The text will flash to indicate that it can be modified.
11. Press  to return to the Main Menu

• **Speed SetPoints**

1. Press  to enter Settings menu.
2. Press  or  until "Spd1" (LOW speed) displays.
3. With  flashing, press  for selected speed to modify the selection.
4. Press  or  to change the speed by one (1) % increments. Range is between 40 - 105% .

NOTE Pressing either button down will change the speed more rapidly.

5. Press  to enter speed.

NOTE More than one (1) minute of inactivity will confirm selection automatically. If ON/OFF is pressed before entering a time, all changes will be lost.

1. Press  to enter Settings menu.

• **Priming**

1. Press  to enter Settings menu.
2. Press  or  until "SPri" (LOW speed) displays.
3. With digits flashing, press  to set up Priming speed.
4. Press  or  to change the speed by one (1) % increments. Range is between 40 - 105% .

NOTE Pressing either button down will change the speed more rapidly.

5. Press  to enter speed.

NOTE More than one (1) minute of inactivity will confirm selection automatically. If ON/OFF is pressed before entering a time, all changes will be lost.

6. Press  or  to change the priming time by one (1) minute increments. Range is 0 - 30 minutes.
7. Press  to enter time. Display automatically returns to Settings with speed flashing.

NOTE More than one (1) minute of inactivity will confirm selection automatically. If ON/OFF is pressed before entering a time, all changes will be lost.

8. Press  to enter Settings menu.

- **Wi-Fi**

1. Press down  and  for an extended time to enter Pair Mode.

- **Restore**

1. Press  to enter Settings menu.
2. Press  or  until "rSET" displays.
3. Press  to restore to the factory defaults. Display will turn Off.

Factory Defaults

- Low Speed: 50%
- Medium Speed: 75%
- High Speed: 100%
- Priming Speed: 100%
- Priming Time: 0 minutes
- Speed in MANUAL Mode: High Speed
- AUTO/Schedule: OFF
- Schedule Settings: All speeds are LOW; T-Start and T-Stop are "00:00"
- Wi-Fi-Bluetooth: OFF

5. MAINTENANCE



- To avoid risk of property damage, severe personal injury or death, verify that all power is turned off before starting this procedure.

- Inspect the pump debris basket for debris by looking through the clear pump lid. Keep the basket clean to improve the performance of the pump. See Figure 7.



- A misaligned basket will cause the lid to be improperly seated, allowing an air leak, which could result in pump damage. Clean the pump basket.

- Clean the pump basket.

- Turn off the power to the pump. If the pump is located below the water level, close the isolation

- valves on the suction and discharge sides of the pump to prevent backflow of water.
- Turn the lid's locking ring counter-clockwise until 'START' aligns with the ports. Carefully remove the lid. (A tool may be used for leverage).
- Lift the basket out of the pump.
- Dispose of the debris and thoroughly clean the basket, making sure all the holes are open. Using a garden hose, spray the basket from the outside to help clear the holes. Remove any remaining debris by hand.
- Replace the basket in the pump by aligning the opening with the suction pipe. If aligned properly, the basket will drop easily into place. Do not force it into place.
- Remove the lid seal and remove debris around the lid seal seat, as this can allow air to leak into the system. Clean the lid seal and place it on the lid.
- Replace the lid with locking ring. Hand-tighten the lid to make an air-tight seal. Do not use any tools to tighten the lid: hand-tighten only.
- Verify that all valves have been returned to the proper position for normal operation.
- Open the pressure release valve on the filter, and make sure it is clean and ready for operation.
- Turn on the power to the pump. Once all the air has been evacuated from the filter, close the pressure release valve.

NOTE Large debris can clog the impeller or stall the motor; replace the basket if it is broken or missing.

6. TROUBLESHOOTING

6.1 Basic Troubleshooting

PROBLEM	SOLUTION
Motor won't start or the controller does not detect the motor	• Have professional check voltage on the main power terminal with the breaker on.
	• Error - see fault code. Power cycle the motor.
	• Check RS-485 connection is secure with no broken wires. • Inspect low voltage wiring for signs of corrosion.
	• With all power off, use a multimeter to check continuity of each low voltage lines from motor to controller. • Replace RS-485 wires completely if necessary.
	• Check RS-485 connector wiring (pins 1-4 should be Red, Black, Yellow, Green).
	• Test motor drive with RS-485 jumper method: Using small sections of 0.5mm² wire, jump pins 1 to 3 and 2 to 4. Re-install connector and attach access cover. Apply power to motor to see if motor spins at 2600 RPM indefinitely. If motor works, the issue is with the RS-485 line or controller.
	• Check DIP switches 3 and 4 configuration are OFF for Pump 01. • If more than one variable speed pump is being controlled with an automation system, refer to DIP switch section of this manual.
	• Check schedule to verify that motor is scheduled to turn on at that time.

PROBLEM	SOLUTION
Motor starts but shuts off soon after	• Check for debris stuck between impeller and diffuser. • Have a certified professional check to see if the drive shaft is seized with all power off. • If large amounts of debris are found, check your strainer basket for breaks. Replace the strainer basket if necessary.
The motor gets hot and shuts off periodically	• Ensure adequate room around motor for air circulation to keep motor cool. • Have a qualified electrician check for loose connections and check voltage at motor while in operation. Main voltage outside of 10% of motor rating plate may cause motor to experience excessive loads.
No power to controller	• Have a certified electrician test voltage on RS-485 line while power is available to motor. It should be between 8 and 12 Volts DC between pins 1 and 4. • Check RS-485 connector wiring (pins 1-4 should be Red, Black, Yellow, Green).
Dry Contacts not working	• Test motor drive with RS-485 jumper method: Using small sections of 22 AWG wire, jump pins 1 to 3 and 2 to 4. Re-install connector and attach access cover. Apply power to motor to see if motor spins at 2600 RPM indefinitely. If motor works, the issue is with the RS-485 line or controller. • Check low voltage wiring for breaks between motor and external switches. With all power off, use a multimeter to check continuity of each low voltage lines from motor to controller. Replace the dry contact wires completely if necessary.

6.2 Fault Codes

FAULT	ACTIONS
E21 Software Overcurrent	Cycle power to the motor
E22 DC Overvoltage	Ensure input voltage is in the correct range
E23 DC Undervoltage	Ensure input voltage is in the correct range
E26 Hardware Overcurrent	Cycle power to the motor
E2A Stall fault	Check pump, impeller and motor fan for obstructions, then cycle power to motor
E2D Processor - Fatal	Contact your local pool service professional
E2E IGBT Overtemperature	Wait for temperature of the motor to cool down. Ensure motor is clear of obstructions that limit proper ventilation
E2F Loss of Phase	Contact your local pool service professional
E31 Processor - Registers	Contact your local pool service professional

FAULT	ACTIONS
E32 Processor - Program Counter	Contact your local pool service professional
E33 Processor - Interrupt/Execution	Contact your local pool service professional
E34 Processor - Clock	Contact your local pool service professional
E35 Processor - Flash Memory	Contact your local pool service professional
E36 Processor - RAM	Contact your local pool service professional
E37 Processor - ADC	Contact your local pool service professional
E3C Keypad Fault	Contact your local pool service professional
E3D AB data flash fault	Contact your local pool service professional
E3E Communication loss fault AB and drive error	Contact your local pool service professional
E3F Generic fault	Contact your local pool service professional