



(all models)

VIRON XT PUMPS

WARNING

FOR YOUR SAFETY - This product must be installed and serviced by a licensed electrician in accordance with the latest applicable version of AS/NZS 3000, along with any other applicable local and national installation codes/standards, and any other local applicable regulations. Before installing this product, read and follow all warning notices and instructions that accompany this product. Failure to follow warning notices and instructions may result in property damage, personal injury, or death. Improper installation and/or operation will void the warranty.

Improper installation and/or operation can create unwanted electrical hazard which can cause serious injury, property damage, or death.



For full warranty terms and conditions and to register your warranty, simply visit **www.astralpool.com.au/warranty** and complete your details. Or scan the QR code and be taken directly to the registration page.

Record your equipment details here for quick reference:

Model No.: _____

Serial No.: _____

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Section 1. Important Safety Instructions

READ AND FOLLOW ALL INSTRUCTIONS

All electrical work must be performed by a licensed electrician and conform to all national, state, and local codes. When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

WARNING

RISK OF SUCTION ENTRAPMENT HAZARD, WHICH, IF NOT AVOIDED, CAN RESULT IN SERIOUS INJURY OR DEATH. Do not block pump suction, as this can cause severe injury or death. Do not use this pump for wading pools, shallow pools, or spas containing bottom drains, unless the pump is connected to at least two (2) functioning suction outlets. Drain covers must be certified to the latest published edition of ANSI/ASME A112.19.8 or it's successor standard ANSI/APSP-16. In Australia AS1926.3 is also an acceptable standard.

WARNING

To reduce the risk of injury, do not permit children to use this product.

WARNING

A check valve can interfere with the proper operation of certain Suction Vacuum Release System (SVRS) products. To avoid possible entrapment hazard, serious injury, or death, make sure to review the operation/owners manual of your particular SVRS product before installing the check valve.

WARNING

To reduce the risk of property damage or injury, do not attempt to change the backwash (multiport, slide, or full flow) valve position with the pump running.

WARNING

AstralPool Pumps are powered by a high-voltage electric motor and must be installed by a licensed or certified electrician or a qualified swimming pool service technician.

WARNING

The pump is for fixed installations only and to be used in conjunction with swimming pool equipment (e.g. filters). The pump is to be installed in accordance with the relevant requirements of the Australian wiring rules AS/NZS 3000. Also refer to the installation instructions relating to the swimming pool equipment for which the pump will be an integral part. The pump is to be supplied through a residual current device (RCD) with a rated residual operating current of 30mA. If the supply cord is damaged it must be replaced by the manufacturer or its service agent or similarly qualified person in order to avoid hazard.

WARNING

Incorrectly installed equipment may fail, causing severe injury or property damage.

WARNING

- Do not connect system to an unregulated city water system or other external source of pressurized water producing pressures greater than 250 KPA (35 PSI).
- Trapped air in the system can cause the filter lid to be blown off, which can result in death, serious personal injury, or property damage. Be sure all air is out of the system before operating.

⚠ WARNING

To minimize risk of severe injury or death, the filter and/or pump should not be subjected to the piping system pressurization test.

Local codes may require the pool piping system to be subjected to a pressure test. These requirements are generally not intended to apply to the pool equipment, such as filters or pumps.

AstralPool pool equipment is pressure tested at the factory.

If, however, the WARNING cannot be followed and pressure testing of the piping system must include the filter and/or pump, BE SURE TO COMPLY WITH THE FOLLOWING SAFETY INSTRUCTIONS:

- Check all clamps, bolts, lids, lock rings, and system accessories to ensure they are properly installed and secured before testing.
- **RELEASE ALL AIR** in the system before testing.
- Water pressure for test must NOT EXCEED 250 KPA (35 PSI).
- Water temperature for test must NOT EXCEED 38°C (100°F).
- Limit test to 24 hours. After test, visually check system to be sure it is ready for operation.

Notice: These parameters apply to AstralPool equipment only. For non-AstralPool equipment, consult the equipment manufacturer.

⚠ WARNING

Chemical spills and fumes can weaken pool/spa equipment. Corrosion can cause filters and other equipment to fail, resulting in severe injury or property damage. Do not store pool chemicals near your equipment.

CAUTION

Do not start pump dry! Running the pump dry for any length of time will cause severe damage and will void the warranty.

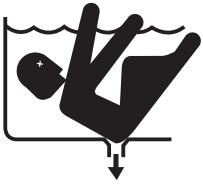
CAUTION

This pump is for use with permanently installed pools and may also be used with hot tubs and spas, if so marked. Do not use with storable pools. A permanently installed pool is constructed in or on the ground or in a building, such that it cannot be readily disassembled for storage. A storable pool is constructed so that it may be readily disassembled for storage and reassembled to its original integrity.

CAUTION

Do not install beneath the skirt of a hot tub. The pump requires adequate ventilation to maintain air temperature at less than the maximum ambient temperature rating listed on the motor rating plate.

SAVE THESE INSTRUCTIONS



⚠ WARNING

SUCTION HAZARD. Can cause serious injury or death. Do not use this pump for wading pools, shallow pools, or spas containing bottom drains, unless pump is connected to at least two (2) functioning suction outlets.

⚠ WARNING

Pump suction is hazardous and can trap and drown or disembowel bathers. Do not use or operate swimming pools, spas, or hot tubs if a suction outlet cover is missing, broken, or loose. The following guidelines provide information for pump installation that minimizes risk of injury to users of pools, spas, and hot tubs:

Entrapment Protection - The pump suction system must provide protection against the hazards of suction entrapment.

Suction Outlet Covers - All suction outlets must have correctly installed, screw-fastened covers in place. All suction outlet (drain) covers must be properly maintained. They must be replaced if cracked, broken, or missing. Drain covers must be listed/certified to the latest published edition of ANSI®/ASME® A112.19.8 or its successor standard, ANSI/APSP-16. In Australia, AS1926.3 is also an acceptable standard. The pool must be shut down and bathers must be restricted from entering the pool until any cracked, broken, or missing drain covers are replaced.

Number of Suction Outlets Per Pump - Provide at least two (2) hydraulically-balanced suction outlets, with covers, as suction outlets for each circulating pump suction line. The centers of the suction outlets (suction outlets) on any one (1) suction line must be at least three (3) feet apart, centre to centre. See Figure 1.

The system **must** be built to include at least two (2) suction outlets (drains) connected to the pump whenever the pump is running. However, if two (2) suction outlets run into a single suction line, the single suction line may be equipped with a valve that will shut off both suction outlets from the pump. The system shall be constructed such that it shall not allow for separate or independent shutoff or isolation of each drain. See Figure 1.

Additional pumps can be connected to a single suction line as long as the requirements above are met.

Water Velocity - The maximum water velocity through the suction outlet assembly and its cover for any suction outlet must not exceed the suction outlet assembly and its cover's maximum design flow rate. The suction outlet (drain) assembly and its cover must comply with the latest version of ANSI®/ASME® A112.19.8, the standard for Suction Fittings For Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs, or its successor standard, ANSI/ASME APSP-16. In Australia, AS1926.3 is also an acceptable standard.

Testing and Certification - Suction outlet covers must have been tested by a nationally recognized testing laboratory and found to comply with the latest published edition of ANSI/ASME A112.19.8 or its successor standard, ANSI/APSP-16, the standard for *Suction Fittings For Use in Swimming pools, Wading Pools, Spas, and Hot Tubs*. In Australia, AS1926.3 is also an acceptable standard.

Fittings - Fittings restrict flow; for best efficiency use fewest possible fittings (but at least two (2) suction outlets).

Avoid fittings that could cause an air trap.

Pool cleaner suction fittings must conform to applicable International Association of Plumbing and Mechanical Officials (IAPMO) standards.

Section 2. General Information

This manual provides installation and operation instructions for the AstralPool Viron XT pumps.

Read the installation and operation instructions completely before proceeding with the installation.

2.1 Technical Assistance

Web: www.astralpool.com.au **Phone:** 1300 186 875

2.2 General Operation Description

Ideal for the average sized pool, the P320 XT has a flow rate sufficient to back wash up to 30" or 800mm diameter sand filters, provide a powerful vacuum when cleaning the pool and drive up to 6 spa jets.

The large liquid crystal display clearly shows the RPM of the motor and enables adjustment of the start up priming time, priming flow rate, and visual display of each speed setting. The inbuilt 24 hour timer is easily enabled and provides up to four time periods each day with different speed settings to provide the perfect flow rate for your pool. In addition, special applications such as in floor cleaning or programming water features are enabled using the time clock and speed selection for different times of day.

The P520 XT provides high flow and high pressure and also incorporates electronic power factor correction which provides even further reductions in power consumption, even on maximum speed.

- Continuous duty rated motor
- Precision reinforced moulded high head impeller, giving extra performance
- Single piece moulded body for added strength and longer life
- Rapid priming diffuser quickly corrects loss of water flow
- Quick and easy disassembly for servicing
- Large capacity basket with easily removed ramp on lid
- Ability to adjust factory pre-set speeds for optimum water flow and maximum energy savings for your pool and its equipment.
- Double Insulated water circuit for maximum electrical protection

2.3 Flow Rate Specification

Model	P320 XT	P520 XT
High Flow Rate (2850 RPM)	320 lpm	520 lpm
Medium Flow Rate (2000 RPM)	206 lpm	426 lpm
Low Flow Rate (1325 / 1125 RPM)	128 lpm	200 lpm

2.4 Dimensions

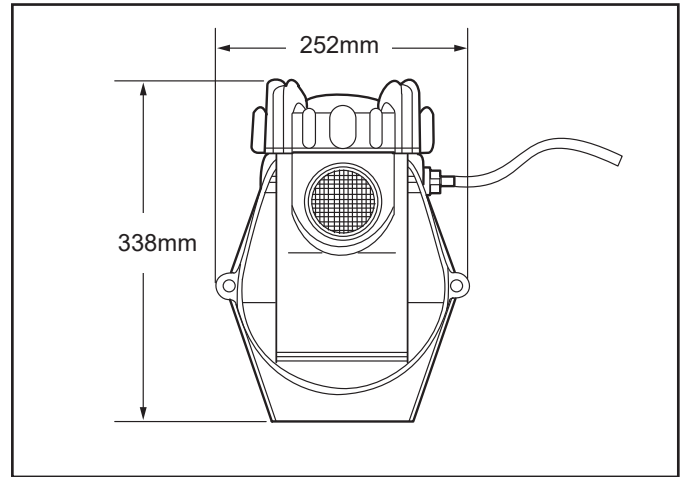


Figure 1. Front Dimensions

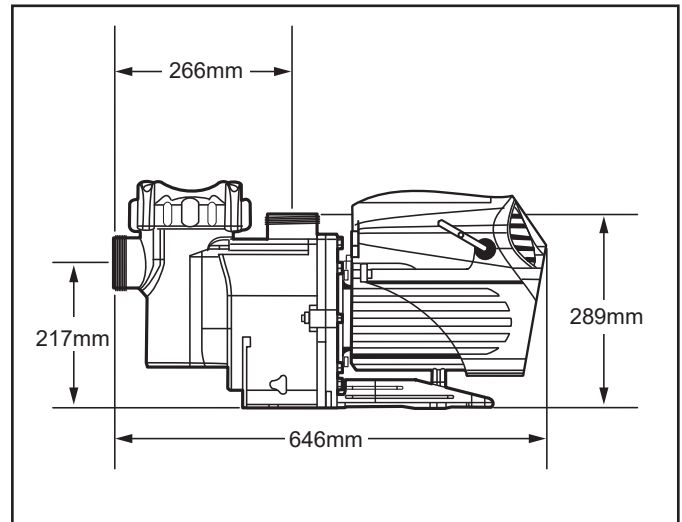


Figure 2. Side Dimensions

Section 3. Getting Started

Install the Viron XT Pump in accordance with the procedures in this manual, local codes and ordinances, and in accordance with the latest edition of the appropriate national code. See Section 4.2.

This manual provides the information needed to meet these requirements. Review all applications and installation procedures before continuing the installation.

3.1 Contents

Before starting, check that you have the correct parts as indicated in Table 1. If any parts are missing or incorrect, please call your local distributor or technical support at 1300 186 875 for assistance.

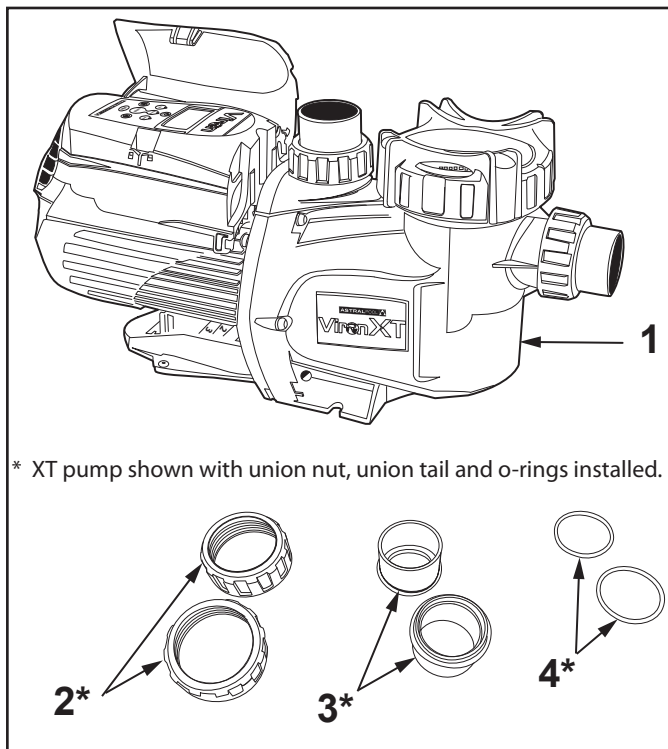


Figure 3. Viron XT Pump Components

Item	Description	Quantity
1	Viron XT Pump	1
2	50 mm Union Nut	2
3	50mm Universal Union Tail	2
4	50mm Universal Union O-ring	2

Table 1. XT Pump Parts

3.2 Technical Specifications

- Power: P320 XT - .75 Kw output, 240V 50 Hz, 4.1 Amp, max speed 2850 rpm; P520 XT - 1.5 Kw output, 240V 50 Hz, 6.0 amp, max speed 2820 rpm
- Operation at from 600 to 2850 rpm (settings per 25 rpm step)
- Number of programmable speeds: 3
- Number of programmable timer settings: 4 per day
- Flow rate at 8 metres hydraulic head: 120 to 200 litres/Minute at 3000 RPM
- Operating temperatures: from 2 to 50°C air, and 2 to 35°C water
- Protection index: IPX4

3.3 Required Equipment

Please ensure that the following equipment is available to the installer at the time of installation.

3.3.1 Required Tools

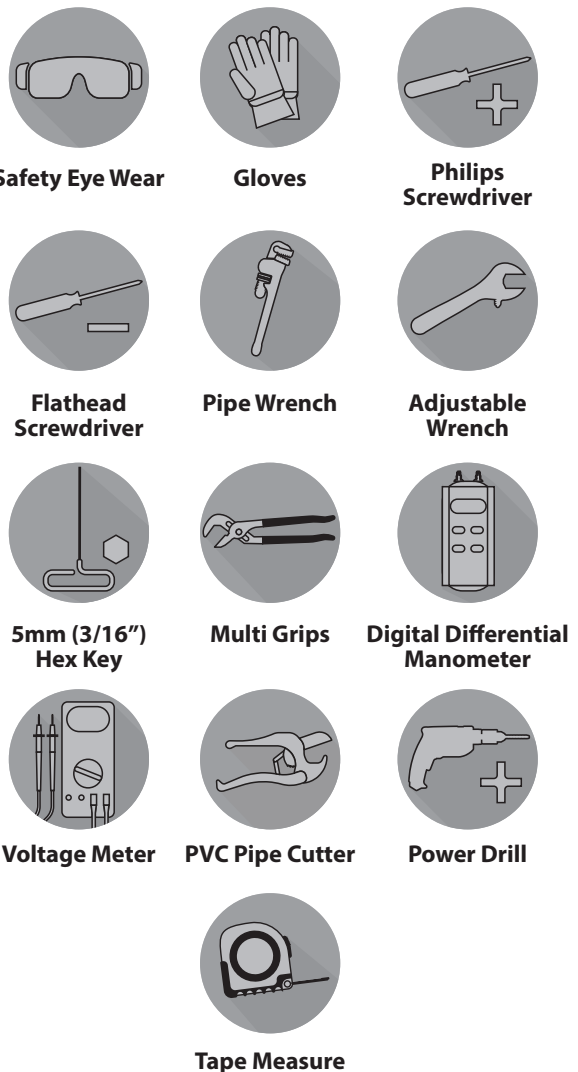


Figure 4. Required Tools

Section 4. Installation

4.1 Pump Location

⚠ WARNING

To Reduce the Risk of Fire, install pool equipment in an area where leaves or other 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.

AstralPool recommends installing the pump within 30 cm (1 ft) above water level. The pump should not be elevated more than 152 cm (5 ft). If the pump is located below water level, isolation valves (check valves) must be installed on both the suction and return lines to prevent back flow of pool water during any routine or required servicing.

⚠ WARNING

A check valve can interfere with the proper operation of certain Suction Vacuum Release System (SVRS) products. To avoid possible entrapment hazard, serious injury, or death, make sure to review the operation/owners manual of your particular SVRS product before installing the check valve.

NOTE: When the pool equipment is located below the pool surface a leak can result in large scale water loss or flooding. AstralPool cannot be responsible for such water loss or flooding or damage caused by either occurrence.

1. Install the pump such that any disconnecting means and/or junction boxes for power connection are within sight of the pump and at least five feet horizontally from the edge of the pool and/or spa. Choose a location that will minimize turns in the piping.
2. Place the pump on a solid foundation that will not vibrate. To further reduce the possibility of vibration noise, bolt the pump to the foundation.
3. Ensure that the foundation has adequate drainage to prevent the pump motor from getting wet.
4. Make sure the pump has the proper ventilation to prevent the motor from overheating. Overheating due to lack of cooling voids warranty.
5. Allow plenty of space for any maintenances by leaving a clear area around the pump.
6. Provide adequate lighting if the equipment is in a potentially dark area.

Pipe Size	Maximum Flow Suction (6 feet per second)	Maximum Flow Discharge (8 feet per second)
38 mm (1½")	140 LPM (37 GPM)	189 LPM (50 GPM)
51 mm (2")	235 LPM (62 GPM)	322 LPM (85 GPM)
64 mm (2½")	333 LPM (88 GPM)	454 LPM (120 GPM)
76 mm (3")	515 LPM (136 GPM)	697 LPM (184 GPM)
102 mm (4")	886 LPM (234 GPM)	1185 LPM (313 GPM)

4.1.1 Installation Recommendations

1. To help prevent difficulty in priming, install the suction pipe without high points (above inlet of pump - inverted "U"s, commonly referred to in plumbing as an airlock) that can trap air. For installations of equipment up to 30 m (100 ft) from the water, refer to Table 1, the pipe sizing chart. For installations of equipment more than 30 m (100 ft) from the water, the recommended pipe size must be increased to the next size.

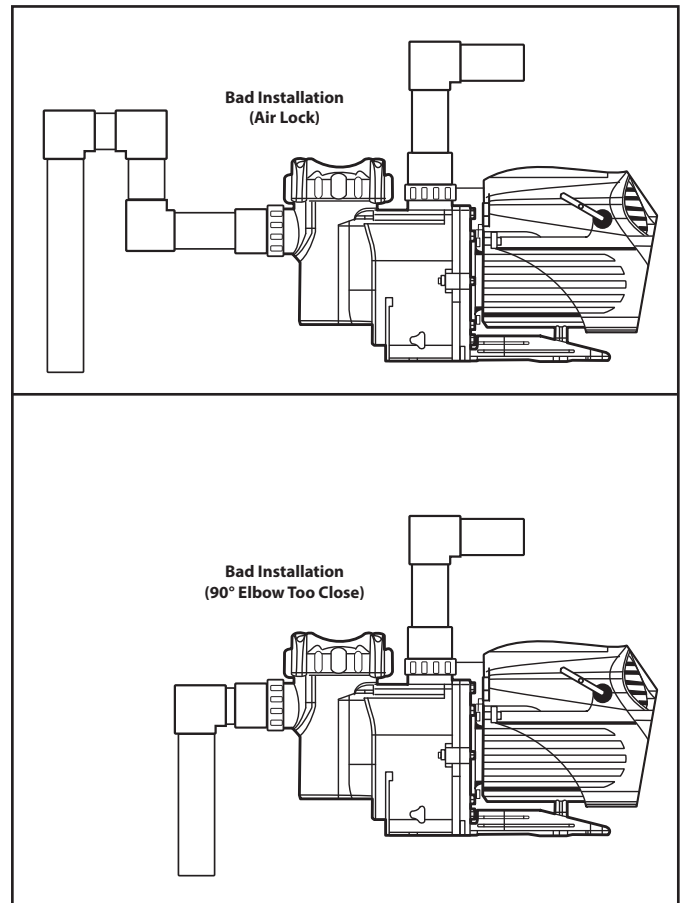


Figure 5. Viron XT Pump Incorrect Piping Installations

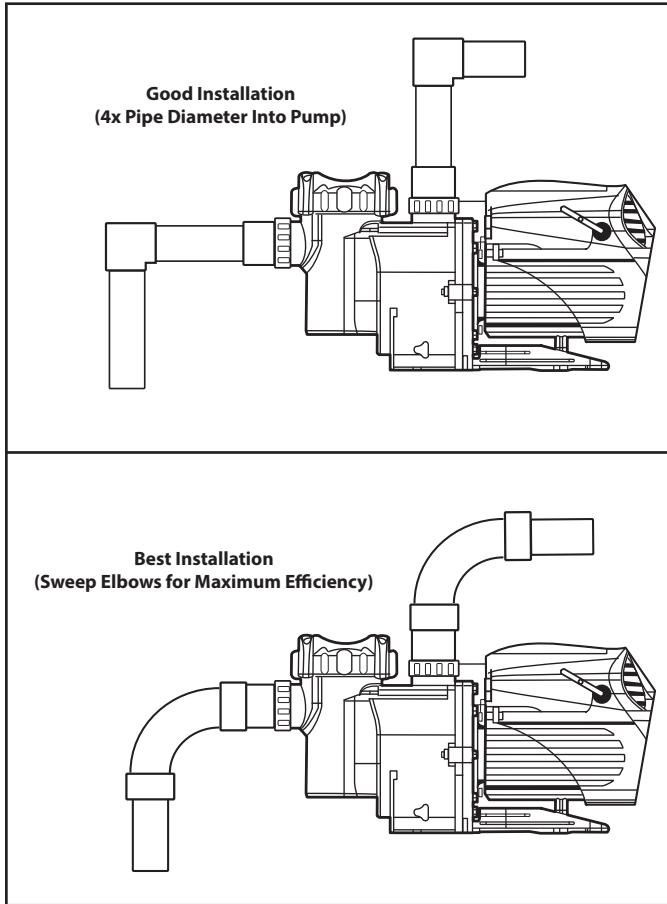


Figure 6. Viron XT Pump Good Piping Installations

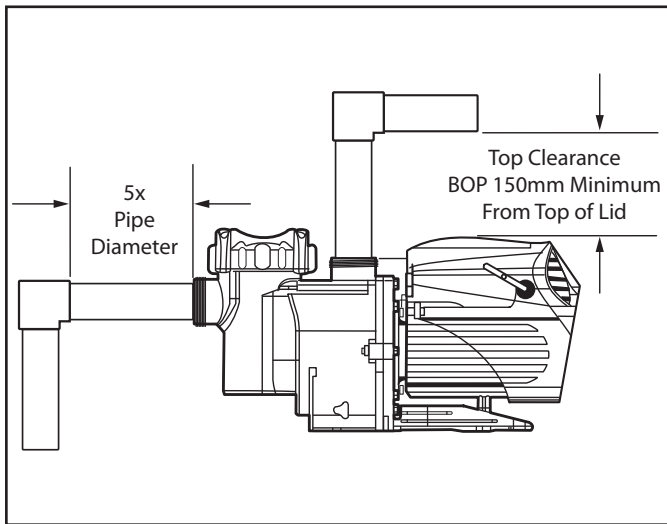


Figure 7. Viron XT Pump Piping Clearance

suction fittings of the main drains must be at least 1 m (3 ft) apart, center to center, or on different planes. The suction fittings can be a drain and skimmer, two drains, two skimmers, or a skimmer with an equalizer line installed. Check the local codes for proper installation.

NOTE To prevent entrapment, the system must be built so it cannot operate with the pump drawing water from only one main drain. At least two main drains must be connected to the pump when it is in operation. However, if two main drains run into a single suction line, the single suction line may be equipped with a valve that will shut off both main drains from the pump.

4. The piping must be well supported and not forced together where it will experience constant stress.
5. Always use properly sized valves. Jandy Diverter Valves and Ball Valves typically have the best flow capabilities.
6. Use the fewest possible fittings and limit the use of 90 degree elbows. Each additional fitting or length of pipe increases resistance to flow which makes the pump work harder.

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

7. Every new installation must be pressure tested according to local codes.

4.2 Pump Installation

⚠ WARNING

AstralPool pumps are powered by a high voltage electric motor and must be installed by a licensed or certified electrician or a qualified swimming pool service technician.

When installing the appliance, ensure all parts are installed in the correct zone in accordance with the wiring rules. In particular refer to AS/NZS 3000 (Australia) and EN 60364 (EU).

- Install on a stable, solid (concrete slab for example) and level surface.
- Screw the pump (and the base(s) if applicable) to the ground using suitable lag-screws.

2. The unions on both the suction and discharge ports simplify installation and service while eliminating the possibility of leaks at threaded adapters.
3. The pump must be connected to at least two hydraulically-balanced main drains for each pool pump suction line. Each drain (suction outlet) assembly must be provided with covers and must be listed or certified to the latest published edition of ANSI®/ASME® A112.19.8, or its successor standard, ANSI/APSP-16. The

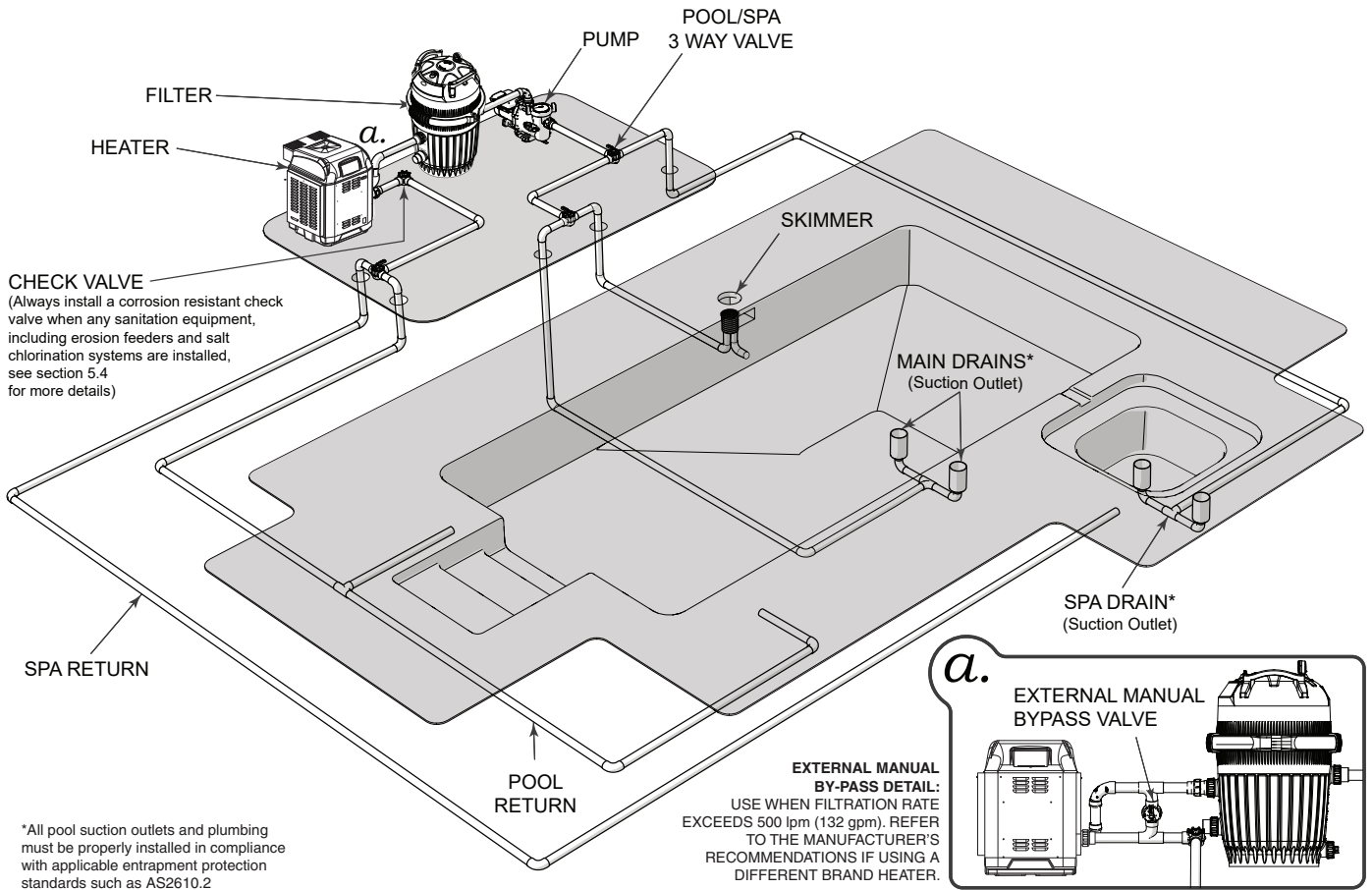


Figure 8. Typical Water Piping Configuration

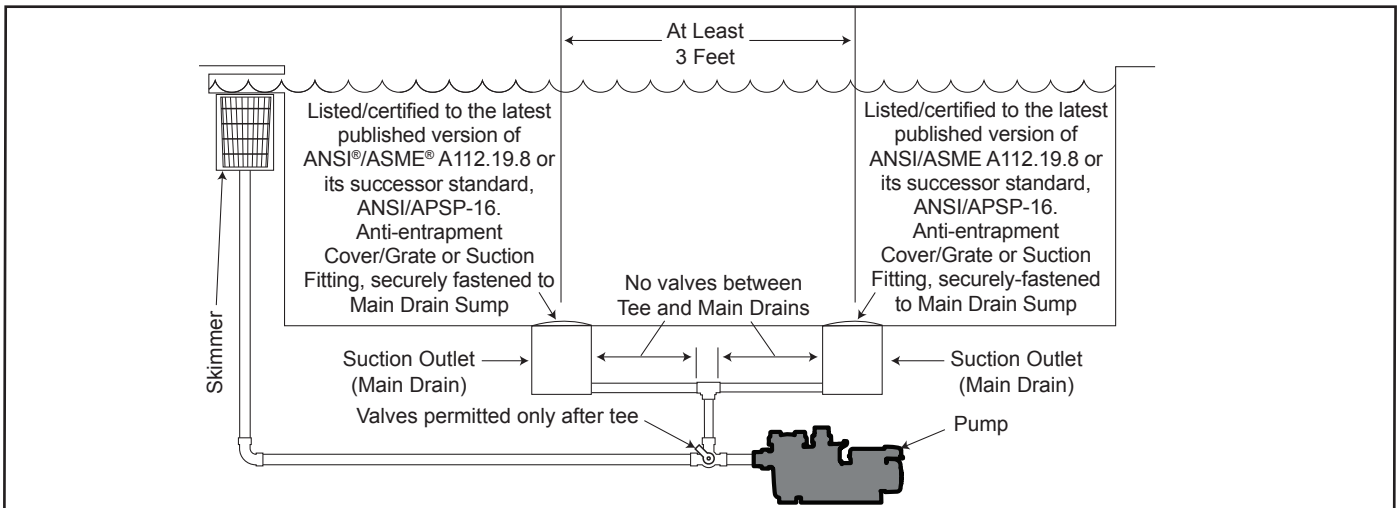


Figure 9. Number of Suction Outlets Per Pump

4.3 Water Connections

The heater should always be installed after the pump and filter. The water connections are located on the right hand side of the heater. The inlet and outlet are clearly marked. Water connections must be completed in 50 mm PVC glue in plumbing.

All automatic sanitising devices must be installed after the heater and in such a way that the sanitiser cannot enter the heater without first mixing with the water in the pool or spa. Sanitisers that are connected prior to the heater will void heater warranty.

A non-return valve is not required to be fitted between the filter and the heater.

1. For best pump performance keep suction pipe length as short as possible with minimum number of bends and use 50mm high pressure PVC suction and return pipe. All equipment such as filters, heaters, chlorinators must have a minimum of 50mm connections.
2. Secure the barrel unions supplied into the attaching pipe work, using approved priming fluid and solvent cement as normal practice, coating both surfaces.
NOTE: Always wear protective gloves when handling and using glue and priming fluid. Ensure no excess adhesive runs into the union proper affecting the sealing or removal abilities. Allow 24 hours to dry before starting pump. Do not use "green" glue on barrel unions. This can cause damage to the ABS material used to manufacture the unions.
3. Install isolation valves before the pump section and after equipment, if the pump is below the water level of the pool.
4. For pump installations 500mm above water level, it generally requires a foot valve at the pool or check valve in the suction line. Suction lines must be installed below water level until just in front of pump location and vertical riser used to reach pump inlet. AstralPool pumps are rated to a maximum head of 25 meters however refer to your pumps data plate for actual achievable pressure
5. All pumps will operate quieter and perform more efficiently if a straight length of 450mm pipe is plumbed horizontally into the front of the pump.
6. Water temperature not to exceed 45 degrees
7. Pumps must be either:
 - supplied by an isolating transformer, or
 - supplied through a residual current device (RCD) with a rated residual operating current not exceeding 30mA.

4.4 Electrical Connections

The XT Pump is supplied with a standard 10 amp 3-pin plug for connection to a 240V 10 amp GPO. All pool or spa equipment connected to mains power should be protected by an RCD circuit breaker.

The provided controller is a complete plug-n-play assembly requiring no additional wired connection.

4.4.1 Voltage Checks

The correct voltage, as specified on the pump data plate, is necessary for proper performance and long motor life. Incorrect voltage will decrease the pump's ability to perform and could cause overheating, reduce the motor life, and result in higher electric bills.

It is the responsibility of the electrical installer to provide data plate operating voltage to the pump by ensuring proper circuit sizes and wire sizes for this specific application.

Most applicable wiring/installation codes require pool pump circuits to be protected with a Ground Fault Circuit Interrupter (GFCI), also commonly referred to as a Residual Current Device (RCD). Therefore, it is also the responsibility of the electrical installer to ensure that the pump circuit is in compliance with this and all other applicable requirements of the installation and wiring code(s)/standard(s) applicable and enforced in the area of installation.

⚠ CAUTION

Failure to provide data plate voltage (+/- 10%) during operation will cause the motor to overheat and void the warranty.

4.4.2 Electrical Wiring

⚠ WARNING

Viron pumps include Printed Circuit Boards (PCBs) and microchips. It is necessary to turn power off completely for 10 seconds before turning pump back on again. Some brands on chlorinators may bleed a small amount of power into the Viron Pump even when the pump off mode is selected. If this occurs, the Viron Pump may not reset correctly and may not start until power is disconnected completely. In some cases, the manufacturer of these chlorinators may be able to remove or change a capacitor which will completely disconnect power to the pump when turned off. If not, a suitable chlorinator may be required to be purchased. Astral Pool chlorinators completely disconnect power to the pump when the pump off mode is selected.

The Viron XT Pump models covered in this installation and operation manual provide separate compartments for high voltage and low voltage wiring.

4.4.3 User Interface

- The user interface is fixed and wired to the pump in the factory.
- The pump communicates with its user interface using an RJ12 cable.

4.4.4 Data Port Connection (RJ12)

If a compatible AstralPool VX Salt Chlorinator, Viron Salt Chlorinator or Viron Connect Touch Screen, is connected with the AstralPool communication cable, the speed of the pump and operating hours can be controlled by these devices.

The Viron P320XT and P520XT must have its in-built timer deactivated if the pump operating times and speeds are to be operated by the compatible AstralPool Salt Chlorinator EQ, RolaChem Dosing Controller or Viron Connect remote touch screen. See Section 6.3.8

1. Remove 2 Philips head screws from rear of pump and the data port cover is removed by hand.
2. Plug RJ12 6 wire flat cable purchased from AstralPool into rear of pump and reassemble.
3. To achieve a proper seal, press the flat cable under the guide tabs (detailed view A). Slide data port cover back on by aligning the tabs with the slots and the flat cable with the recess (detailed view B).

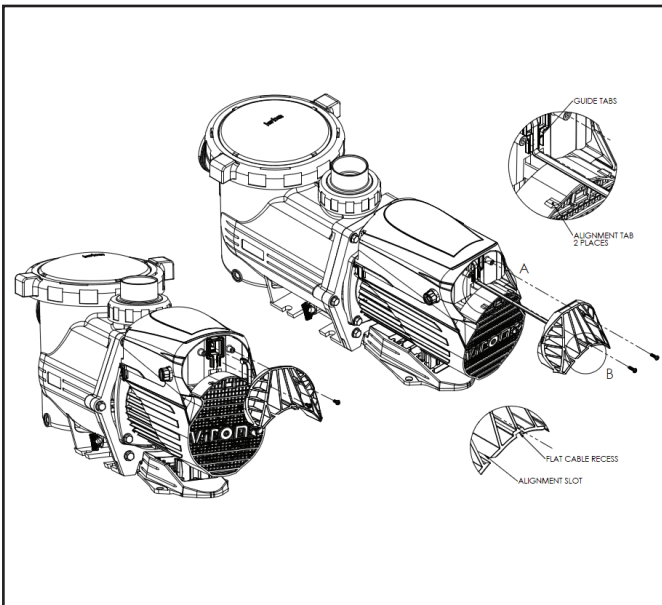


Figure 10. Data Port Location on XT Pump

Section 5. Operation

5.1 Normal Operation

The Viron XT Pumps has three (3) pre-set speed settings: Low, Medium and High.

- Low speed is the recommended setting for everyday pool filtration when a cleaner is not connected.
- Medium speed can be used for gentle spa jet action, when a suction cleaner is connected to the skimmer or pool filtration.
- High speed should be used when backwashing, manually vacuuming the pool, or operating spa jets or some water features such as waterfalls.

5.2 Starting Up the Pump

CAUTION

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.

WARNING

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

1. 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.
2. Prior to replacing the lid, check for debris around the lid o-ring seat. Debris around the lid o-ring seat will cause air to leak into the system and will make it difficult to prime the pump.
3. Hand-tighten the lid to make an air tight seal. Do not use any tools to tighten the lid: hand-tighten only. Make sure all valves are open and the unions are tight. Restore power to the pump.
4. Once all the air has left the filter, close the pressure release valve.
5. Press the MENU button for initial programming to enter overdrive speed. FAST and two (2) rotating circles will show on the user interface display.
 - Viron XT Pump primes 30% faster than conventional maximum speed.

- Viron XT Pump automatically limits maximum speed according to the system’s total dynamic head and power consumption.
 - Once the pump is primed (or fail to prime within five (5) minutes), the speed will return to the last speed when in the MANUAL mode.
6. If the water flow is not available within 1/2-minute, turn off the power and prime the pump again. After three (3) attempts at priming, turn off the pump and check for leaks.

NOTE If no leaks are evident, a check valve or foot valve is required to hold water for priming.

7. If water flow is not adequate after cleaning the lint basket, turn off the power and check for other issues such as the check valve, air leaks, faulty seal, cracked lint pot lid, etc.
8. The Viron XT Pump will automatically start on PRIME speed for the first five (5) minutes to assist with priming, which will quickly fill the hair and lint pot with water. After five (5) minutes, the speed will return to the last speed when in the MANUAL mode. Note: See Section 6 for further details on adjusting the Prime speed and Prime time.
9. During normal operation, it is recommended that the Viron XT Pump operate on LOW speed for twelve (12) hours per day. This setting provides the lowest operating cost with the lowest noise levels. Should the pool have areas where the water does not turn over with this setting, increase the speed until the desired water movement is obtained.

For technical assistance, call AstralPool Technical Support at 1300 186 875.

5.3 Pump Lid Removal

WARNING

ELECTRICAL SHOCK HAZARD

Turn off all switches and the main breaker in the variable-speed pump electrical circuit before starting the procedure. Failure to comply may cause a shock hazard resulting in severe personal injury or death.

1. Make sure that the pump is turned OFF.
2. Make sure that the switch to the circuit breaker to the motor is turned OFF.
3. Make sure all necessary isolation valves are closed to prevent water from reaching the pump.
4. Following the markings on the locking ring, turn the ring counter-clockwise until the ‘START’ markings align with the ports. See Figures 11.
5. Carefully remove the lid with locking ring.

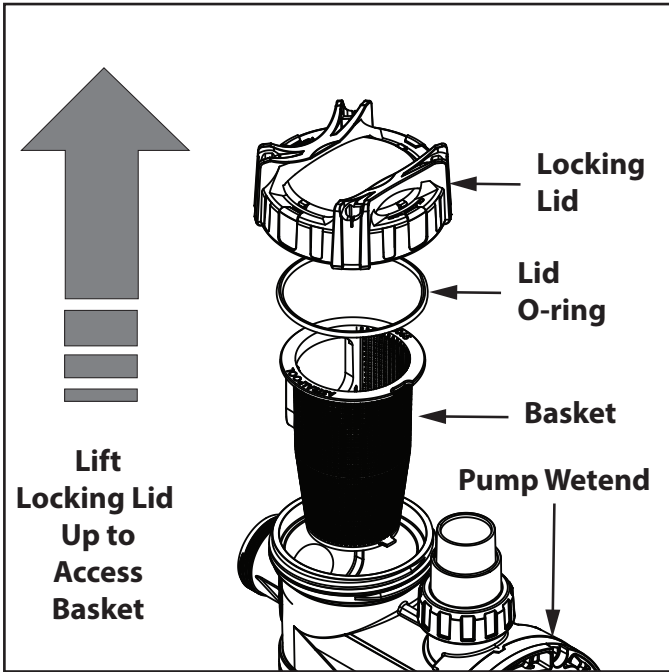


Figure 11. Remove Pump Lid

1. Fill the system with water to eliminate trapped air.
2. Pressurize the system with water to no more than **35 PSI**.
3. Close the valve to seal the water in the system.
4. Observe the system for any leaks or pressure decay.
5. If there are lid leaks, repeat this procedure. For AstralPool Technical Support, call 1 300 186 875.

5.4 Conduct Pressure Test

⚠ WARNING

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 bleed valve on the filter and loosening the pump basket lid while filling the pump.

⚠ WARNING

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.**

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Do not pressure test above 35 PSI. 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.

⚠ WARNING

When pressure testing the system with water, it is very important to make sure that the pump basket lid is completely secure.

Section 6. Viron XT Pump Controls

6.1 Viron XT Pump Control Panel

The Viron P320 and P520 XT Pumps incorporate an LCD backlit screen with the following features:

- In-built Time Clock
- Timer periods: 1, 2, 3, 4 or not used
- Variable speeds: Low, Medium or High for each timer period
- Displays actual RPM speed of motor
- Programmable via compatible AstralPool remote control or chlorinator to operate at different speeds for different times of day
- Enables start-up priming speed to be adjustable and time of start-up speed to be changed from 2 minutes to 120 minutes



Figure 12. Viron XT Pump Control Panel

6.2 Speed Selections

General Rules:

- The total volume of water in your pool should be turned over at least once a day.
- If operating for longer periods of time, you may be able to turn the output of your salt chlorinator to a lower level. Check your chlorine level frequently to ensure you do not over or under chlorinate your swimming pool.

- **Low Speed** is factory pre-set and is the recommended setting for your daily filtration flow rate – enough to gently turn the water over once per day and circulate the water completely around your pool. However, it is essential that your professional pool installer adjust your low speed so that your chlorinator cell remains full or near full of water during operation and that your skimmer weir door is creating sufficient surface tension to skim leaves from your pool. Other factors for adjusting low speed may include satisfactory operation of a suction cleaner or increased flow rate to circulate water to “dead” spots in the swimming pool.
- **Medium Speed** is generally set up as your special purpose flow rate. For example, an In floor cleaning system will require higher pressures and flow rates to operate and medium speed can be set up to operate the In floor cleaning system. Other special purpose flow rates may include but are not limited to: operating spa jets, operating water falls or water features, operating a suction pool cleaner.
- **High Speed** is generally set up to backwash your sand filter. As a rule of thumb, this speed should be set so that the gauge on your filter is approximately 70kPa to 100 kPa in pressure but this will depend on the size of your filter, and the size and length of the backwash pipe line.
- **Overdrive Mode** can be used to drive in floor cleaning systems, obtain extra pressure when spa jets are selected or for additional vacuum suction when cleaning the pool.

In warmer weather, or when the pool is used a lot, your pump should operate for 12 hours a day or more. Check your chlorine levels and visually inspect your water to ensure that (a) you have adequate chlorine and (b) the water in your pool looks clear and inviting. If you have any doubts, take a sample of water to your local pool shop for a water analysis.

Some Tips:

- The XT P320 will provide around 15,000 to 18,000 liters per hour on high speed, depending on pipework, valves, filter size and other equipment installed on your pool. On low speed the factory preset flow rate is approximately 7,500 liters per hour. Low speed will use approximately 10% of the power consumption that high speed will use. Therefore, operating the pump 8 hours per day will provide a 60,000 liter pool one complete turn over.
- The XT P520 pump will provide around 36,000 liters per hour on high speed, depending on pipe work and the Factory preset low speed at 1125 RPM will provide around 12,000 liters per minute. This is sufficient to turn a 96,000 liter pool over once per day.
- As a guide, low speed should achieve a visible skimming of the surface of the pool through your skimmer box. When connected to an AstralPool compatible salt chlorinator, Viron Connect Touch Screen Control System, we recommend that for one hour a day the filtration period is operated on at least medium speed to achieve full circulation and good surface skimmer of the pool. The balance of the filtration cycle can then be set on low speed.

- However, should your pool water develop cloudiness or your pool surface exhibit algae growth you may need to increase the low speed of your pump to ensure adequate circulation of water and chlorine to all parts of your pool.
- It is important to check your chlorine levels, pH and other parameters to ensure your water quality is correct before adjusting the speed of your pump. We recommend these checks are carried out by your professional pool shop or service technician.

Examples of Speed Selection during operation and use of your Viron P320 and P520 XT Pumps:

Function	Speed
Vacuuming Pool or Spa	High Speed or Overdrive
Operating Spa Jets	High Speed or Overdrive
Operating Waterfall or Water Features	Medium Speed or High Speed, Depending on Effect Required
Cleaning Up Pool with Cloudy Water	Up to 24 hours on High Speed or Overdrive Mode
General Filtration	Low Speed (8 hours in Winter, 8 to 12 hours in Summer)

6.3 Programming

6.3.1 Factory Default Setting

1. The inbuilt timers are activated and will control the time the pump operates
2. Connectivity to AstralPool compliant Salt Chlorinators, EQ Chemical dosing controllers or Viron Connect remote Controls is turned "off"
3. Use the "auto" button to turn the pump on or off. When in on position, the pump will remain off until the next timer period unless pressed again to manually on. If pump is turned to manually on, it will continue to operate indefinitely. If in the "Off" position (visible on the LCD), the pump will remain indefinitely off. For timer operation, ensure the "auto" button is pressed so that the LCD screen displays "auto".

6.3.2 Setting the Current Time

1. If connected to a compliant AstralPool Salt Chlorinator or EQ dosing controller connect data cable between rear of pump and the chlorinator in EQ dosing unit.
2. Connect and turn power on to the pump and Chlorinator (or dosing unit)
3. Have pump set in "MANUAL OFF"
4. Press "MENU BUTTON" to toggle through the selections until "CLK" appears and press "ENTER" to set time. Use up and down arrows to set the hour, press "enter" again to set minutes and then press "enter" again to set AM or PM.
5. Press Auto/Power button to accept.
6. The LCD screen will quickly flash 3 times to indicate the new setting has been accepted.

6.3.3 Setting Independent Pump Operation

1. Toggle Menu until "CONF" is displayed on the LCD screen
2. Press and HOLD "enter" for 3 seconds. "TMRS" will appear.
3. Press "enter"
4. Press UP or Down buttons to turn "TMRS ON"
5. Press "enter" to accept
6. Press "auto" to return to main menu.

6.3.4 Changing Speed Settings

1. Select the Speed Button to be adjusted, Low, Medium or High. Respective LED will light up.
2. Alter the speed in increments of 25 RPM using the up and down arrows until the desired speed is displayed on the screen. Respective "Speed 1", "Speed 2" or "Speed 3", will flash while editing.
3. The new speed will automatically save after 2 seconds. Flashing will stop to signal save.

6.3.5 Setting Filtration Timer Periods

1. Press Menu to go to PRIM setting.
2. Prime period is defaulted to 5 minutes and high speed. We recommend if your pump is installed at or below water level, you change the PRIM to 2 minutes. Press "enter" and then Up or Down arrows to change the prime speed. Press "enter" to accept. Priming period will now be displayed.
3. Use the Up or Down arrow to change the Priming period. Press "enter" to accept.
4. Press Menu to go to TMR "timer settings" and press "enter" to change.
5. Timer 1 is factory set to start at 8 am. Use up or down arrows to change. Press High, Medium, or Low to select the speed of the pump during Timer 1. On the LCD Screen, Low is represented by speed "1", Medium by speed "2", and High by speed "3".
6. Press Enter to move to the stop or end time of Timer 1. Use the up and down arrows to change the end of Timer 1.
7. Timer 2 will now appear on the LCD Screen. Repeat instructions 4. to 6. Above.
8. Timer 3 will now appear but is factory pre-set to OFF. The OFF time menu selection shows prior to 12:00 a.m. and must be selected to turn that Timer period off. Use the up and down arrows to activate the time and repeat process 4 and 5 above.
9. Timer 4 is also factory pre-set to "off" but can be activated by using the up and down arrows.
10. Remember to select the speed you wish to operate during each timer period by pressing the High, Medium or Low buttons while still in the Timer Start program.

6.3.6 Using In-Built Timer with Non-compliant Chlorinator

1. We do not recommend the use of the pump timers when a non compliant chlorinator or chemical doser is supplied water flow by the Viron P320 or P520 XT pump.
2. In this case, the pump operating hours should be controlled by the chlorinator time clock and the pump plugged into the chlorinator. This is a safety measure provided for by most chlorinator manufacturers.
3. However, it is important to deactivate the inbuilt pump timers.
4. Have Pump in "MANUAL OFF"
5. Toggle Menu until "CONF" is displayed on the LCD screen
6. Press and HOLD "enter" for 3 seconds
7. Toggle Menu until "TMR" appears.
8. Press UP or Down buttons to turn "TMR OFF"
9. Press "ENTER" to accept
10. Press "AUTO" to return to main menu.
11. When cycling through the Menu button TMR will no longer appear
12. You will no longer be able to automatically have the speed of the pump changed during different times of the day.
13. However, if you wish for a period where the pump operates at a high speed, for example to circulate the water vigorously for a part of the daily filtration, you can use the PRIMING setting to do so.

6.3.7 Using Priming Program to Circulate Water at Higher Flow Rate

1. Have PUMP in MANUAL OFF
2. Press MENU BUTTON TWICE until PRIM appears on the screen
3. Press ENTER To show current Speed, use UP DOWN buttons to Adjust speed. Adjusts in 25 RPM increments. Once Speed is selected Press ENTER. (Similarly to HIGH Speed, PRIME speed can be set to overdrive mode by using the Up button to increase the speed above normal high speed) We recommend high speeds for Priming
4. PRIMING TIME will now appear on the screen. Prime period is defaulted to 5 minutes and high speed. Use the up and down arrows to change the Priming period From 2 minutes up to 120 minutes. Press ENTER to accept, Screen will Flash
5. Press "Auto" to exit the programming.

6.3.8 Using Pump with AstralPool-Compliant External Control

AstralPool manufactures Salt Chlorinators, EQ chemical dosing units or the Viron Connect Touch Screen Control system which can control both the operating times of the all Viron XT pumps PLUS the speed the pump operates at during each timer period.

For the P320 & P520 you must enable the communication port and disable the Pump in built timers.

1. Toggle Menu until CONF (configure) appears. Hold enter for 3 seconds.
2. Toggle Menu until "TMR" appears.
3. Press UP or Down buttons to turn "TMR OFF". Remember, you are now using the external control to set the pump operating hours, so the pump timer must be turned off.
4. Press "enter" to accept
5. Toggle menu until SYS (system) appears. Press the up or down button and turn to "ON". The Viron P320 or P520 XT will accept the start, end and pump speed instructions from the AstralPool compliant control chlorinator EQ & Rolachem dosing controller or Viron Connect Touch Screen Control.
6. Press "auto" to return to main menu.
7. The time will still be visible on the LCD display however, the timer function in the menu setting will no longer appear. Toggle the menu button will now only display PRIM (priming program), CLK (clock setting) and CONF (Configuration menu).
8. Refer to your AstralPool compliant Chlorinator, "EQ", RolaChem Dosing Control or Viron Connect Touch Screen Control manual for details of programming the pump speed and operating hours.

6.4 XT Pumps and Other Products

6.4.1 Use With Remote Controls

6.4.1.1 Viron XT Pump Standalone

- 4 built in timer periods in pump
- 3 programmable speed settings
- Low, medium or high speed can be selected in each timer period
- Priming period can be selected from 2 to 120 minutes
- Prime RPM can be adjusted

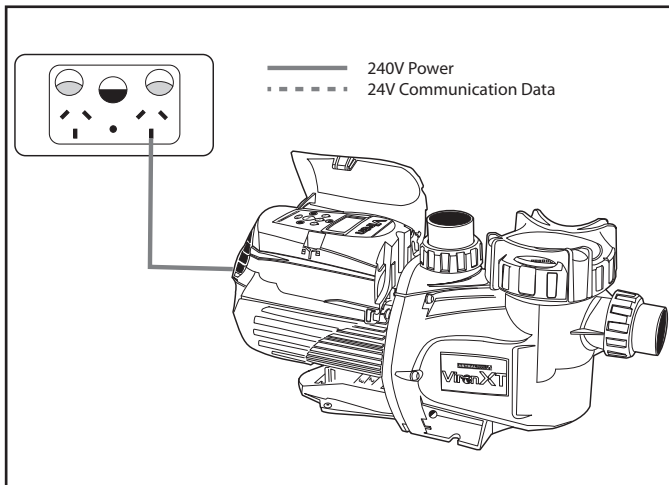


Figure 13. Viron XT Pump and Remote Control

6.4.1.2 Viron XT Pumps and Compatible VX Timer Model Chlorinator or Viron Salt Chlorinator

- Timer periods set up in chlorinator
- Low, medium or high speed can be selected for each timer period
- Data cable directly connects pump to chlorinator
- XTPump to be set up with timer periods deactivated
- Pump speed can be changed from pump (from chlorinator early 2012)

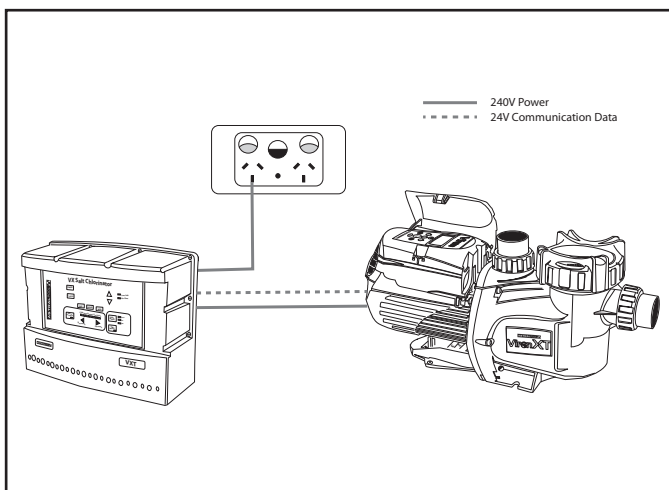


Figure 14. Viron XT Pump, Compatible VX Timer Model Chlorinator and Remote Control

6.4.1.3 Viron XT Pumps, VX S (Non-timer) Model Chlorinator and Viron Connect 10 Remote Control System

- Timer periods set up in controller
- 3 programmable speed settings on pump
- Select low, medium or high speed during each timer period
- Data cables connecting pump/chlorinator/controller
- XT Pump to be set up with timer periods deactivated
- Pump speed can be changed from pump or controller

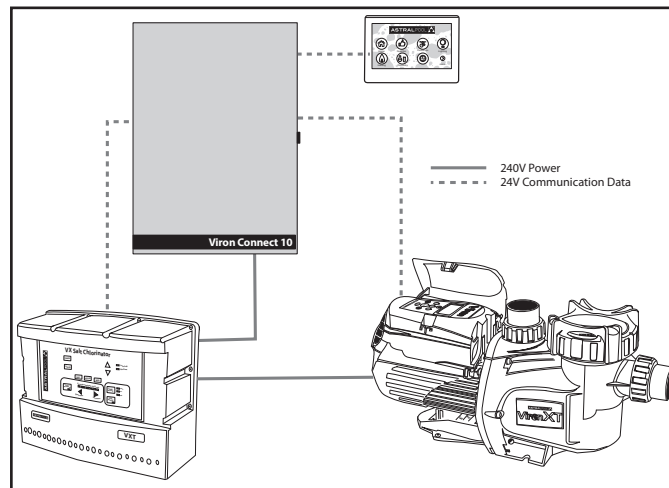


Figure 15. Viron XT Pump, VX S (Non-timer Model) Chlorinator and Viron Connect 10 Remote Control System

6.4.2 Use with Suction Cleaners

When connecting a suction cleaner to the Viron XT pump, it essential that full prime is achieved on the pump prior to connecting the cleaner hose. During operation at low speeds, the pump may only operate with partial prime in the hair and lint pot chamber.

To operate a suction cleaner on your pump;

1. Choose the speed button (low, medium or high) on which the pump will operate when the suction cleaner is connected.
2. Allow pump to operate for a minimum of 2 minutes to allow a full prime to be achieved.
3. Connect cleaner plate and hose to skimmer/wall suction only after all air has been purged from the top of the hair and lint pot of your Viron Pump.
4. Adjust speed (with increase or decrease buttons) at which the cleaner will travel to all areas of the pool. Factory set medium speed will usually operate all suction cleaner types in most pools. If using the Low Speed setting, it will usually be necessary to increase the low speed to ensure the suction cleaner operates reliably.
5. When cleaner is no longer required, disconnect and remove hose/cleaner plate from system. Select the lowest filtration speed that keeps your pool clean.

6. If replacing or selecting a new cleaner, AstralPool recommend our Robotic Range of Cleaners which operate independently from the filter pump and allows the pump to operate at a speed which offers the maximum energy (and cost) savings.

6.4.3 Use with Gas Heaters

Gas heaters (and electric heat pumps) generally rely on a water pressure switch to activate the heater control circuit. When a variable speed pump operates on low speed the water pressure produced in generally insufficient to activate the pressure switch and control circuit within the heater.

If using a compatible AstralPool Gas Heater you can automatically increase the speed of your Viron XT pump to ensure the water pressure switch is activated and the heater obtains enough water flow to operate correctly.

An RJ12 (6 wire flat cable) specifically wired and obtained from AstralPool will connect your pump and heater. Refer to Heater Instruction Manual for data cable connection details.

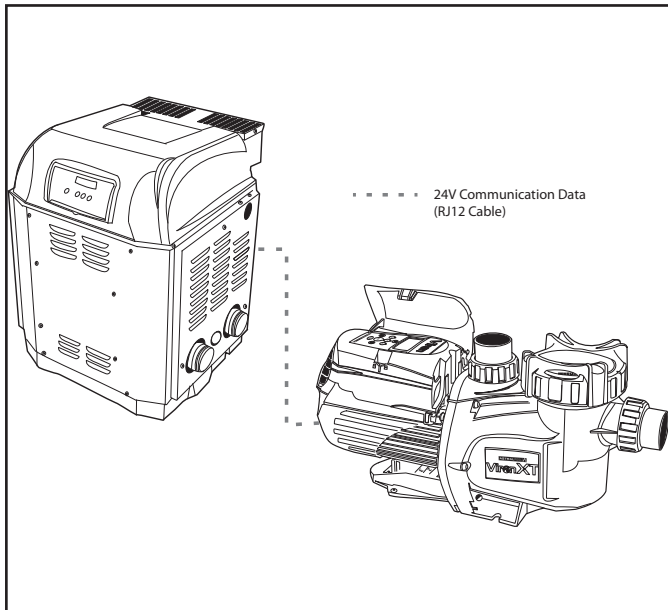


Figure 16. Viron XT Pump with RJ12 Cable Connection

Viron XT Pump is connected to Viron Heater or Other Compatible AstralPool Heater via RJ12 cable	
Viron Heater Status	Viron XT Pump Response
When heater is OFF	Runs at default set speed
When ON but not lit	Runs at Medium speed minimum. The user can use the buttons to select medium or high only (low speed button has no effect). The start-up period is cancelled.
When flame first lights	Runs at High speed. The user cannot change the pump's speed.
When flame is lost	Runs at default set speed or Medium speed if heater power is ON.

Viron XT Pump is connected to Viron Heater or Other Compatible AstralPool Heater via Viron Connect	
Viron Heater Status	Viron XT Pump Response
When heater is OFF	Runs at the user's manual speed or chosen default speed when operating due to timers.
When ON but not lit	Changes to a higher speed which is configured by the user in the installation set up (the "heater ON" speed), or the speed of the current timer. The user cannot change to low speed.
When flame first lights	Runs at high speed. The user cannot change the pump's speed.
When flame is lost	Runs at the user's manual speed or the chosen default speed when operating due to timers.

Section 7. Maintenance

7.1 Routine Maintenance

Inspect the pump filter basket for debris by looking through the clear pump lid. Remove any debris, because as debris accumulates, it will begin to block the flow of water through the pump. Keep the basket clean to improve the performance of the pump.

1. 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.
2. Turn the locking ring counter-clockwise until 'START' aligns with the ports. Carefully remove the lid.
3. Lift the basket out of the pump.
4. 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.
5. 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.

CAUTION

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

6. 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.
7. 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.
8. Verify that all valves have been returned to the proper position for normal operation.
9. Open the pressure release valve on the filter, and make sure it is clean and ready for operation.
10. Turn on the power to the pump. Once all the air has been evacuated from the filter, close the pressure release valve.

7.2 Winterizing the Pump

CAUTION

The pump *must* be protected when freezing temperatures are expected. Allowing the pump to freeze will cause severe damage and void the warranty.

CAUTION

Do not use antifreeze solutions in the pool, spa, or hot tub systems! Antifreeze is highly toxic and may damage the circulation system. The only exception to this is Propylene Glycol. For more information, see your local pool/spa supply store or contact a qualified swimming pool service company.

1. Drain all water from the pump, system equipment, and piping.
2. Remove the two (2) drain plugs. Store the drain plugs in a safe location and reinstall them when the cold weather season is over. ***Ensure the drain plugs and o-rings are not misplaced.***
3. Keep the motor covered and dry. Do not cover the pump with plastic, because this will create condensation that will damage the pump.

- NOTE** AstralPool recommends having a qualified service technician or electrician properly disconnect the electrical wiring at the switch or junction box. Once the power is removed, loosen the two (2) unions and store the pump indoors. For safety, and to prevent entry of contaminants, reinstall all conduit and terminal box covers.
4. When the system is reopened for operation, have a qualified technician or electrician make sure all piping, valves, wiring and equipment are in accordance with the manufacturer's recommendations. Pay close attention to the filter and electrical connections.
 5. The pump must be primed prior to starting. Refer to Section 5.2, Starting Up the Pump.

7.3 Maintenance Schedule

The Viron XT Pump incorporates moving parts and withstands high velocity water with chemicals in it. Some of these parts will wear in the normal course of use and require regular checks and maintenance. Performing these checks and maintenance will identify parts that have worn and require repair/ replacement before further serious damage is sustained. A small amount of regular care and attention to your pool equipment will help ensure long life and trouble free performance.

To protect against extremes of temperature, your unit is vented to allow expensive electronics to cool. Ants and some insects are often attracted to the warmer, dry environment inside the enclosure. We recommend that, with power turned off, you spray a surface insecticide on the surfaces surrounding the control to prevent ant and insect ingress. Repeat every three months or as necessary.

Note: Regular maintenance is important to ensure long life and trouble free performance of your pool equipment. If unable to perform the maintenance yourself, contact your local pool professional to request assistance with the maintenance.

Timing	Maintenance Check	Service Action If Required
Weekly or sooner	Check and empty hair and lint basket	Empty leaves and debris
Three Monthly	Check Lid O-ring and Inlet/Outlet O-rings for leaks	Isolate Pump, turn power off, clean and grease O rings or replace if necessary
	Check surroundings for leaves, debris and flooding	Remove debris and rectify if flooding
Three Monthly	Check for insects/ants	Spray a surface insecticide on the surfaces around the unit to prevent ant and insect ingress
Three Monthly	Check for leaks under the pump	Call Service technician, repair or replace mechanical seal and motor bearing if necessary

Table 2. XT Pump Maintenance Schedule

Section 8. Troubleshooting

When there is an error condition, a message is displayed on the screen. When the error situation is corrected, the error message ends automatically. If the pump continues to perform incorrectly, please contact AstralPool at 1 300 186 875.

Issue	Possible Cause	Solution
Pump is noisy or humming	<ul style="list-style-type: none"> It could either be the impeller, bearings, mechanical seal, capacitor or a burnt out motor. 	<ul style="list-style-type: none"> Call for service.
Pump Not Running	<ul style="list-style-type: none"> There could be something stuck in the impeller. 	<ul style="list-style-type: none"> You can try a flat head screwdriver and pop it in underneath the cowl to see if you can get some free movement of the impeller. If it doesn't move, there could be something stuck inside that needs to be removed. This is part of general maintenance and will not be covered under warranty. If it does move, book a technician or service agent to attend as the motor may have failed.
	<ul style="list-style-type: none"> Check the hair and lint basket 	<ul style="list-style-type: none"> Damage to the basket could mean a piece of debris has passed through to the impeller which can cause a jam in the pump, which is not covered under warranty.
Pump is leaking under lid or under pump	<ul style="list-style-type: none"> Leaking from the lid 	<ul style="list-style-type: none"> The O ring in the lid being cracked from not having Hydroslip applied or the lid itself is not secure. This is general maintenance and will not be covered under warranty. If the lid has a crack in it, we can send a new lid and O ring at no charge if under warranty.
	<ul style="list-style-type: none"> Leaking from underneath 	<ul style="list-style-type: none"> General wear and tear or poor water chemistry can cause the mechanical seal to leak (poor water chemistry is not covered under warranty). Book a technician or agent to attend.
Pump is not priming (not filling up)	<ul style="list-style-type: none"> Maintenance behind schedule due to winter season or other scheduling conflicts. 	<ul style="list-style-type: none"> Check for debris build up in the skimmer basket. This can cause reduced flow to the pump. Also ensure that any suction cleaners are disconnected as this can be restrictive. Check for debris build up in the hair and lint basket of the pump. Remove and check the basket for any signs of damage or splitting. Ensure that the hair and lint basket is sitting correctly in the pump as the lid may not close and cause air to enter the system. Clean the O Ring of the lid and ensure it is greased with HydroSlip. If the O Ring looks damaged, make sure it is replaced. Also remove fittings from front and top of pump, clean and check O Rings. If damaged, make sure it is replaced. Wash thread on both sides of fitting with fresh water and refit.

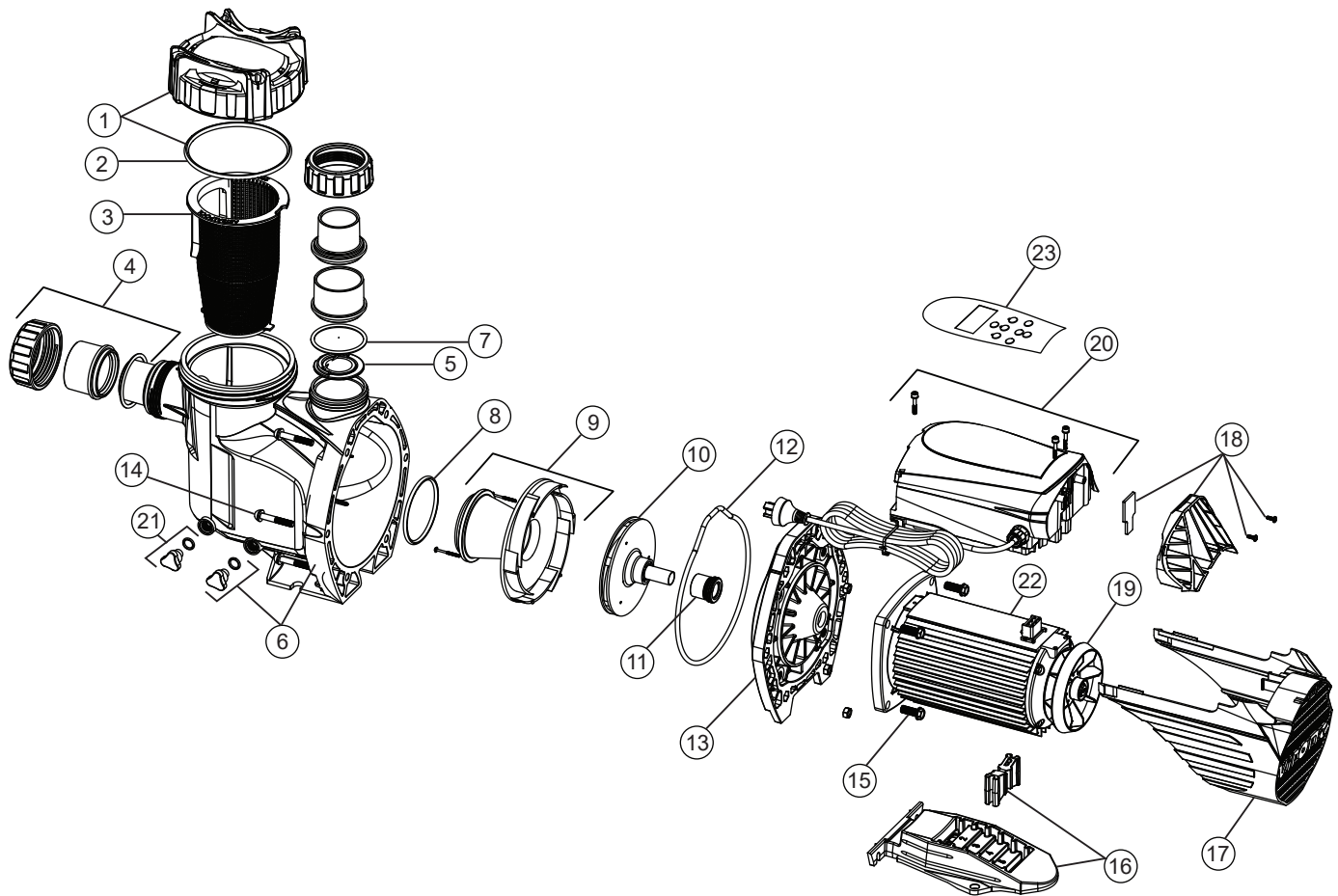
Table 3. Troubleshooting

8.1 Fault Codes

Fault Code Displayed	Meaning	Description
HI T	Over Temperature	Control is very hot and could be due to: <ul style="list-style-type: none"> Extreme ambient temperatures Poor airflow over the motor The pump will attempt to slow down to reduce the heat generated to maintain operation. The XT pump will indicate SAFE if it is still running. Once the temperature becomes too hot, HI T will be displayed.
HI A	Over Current	Motor is drawing excessive current. Possible causes include: <ul style="list-style-type: none"> Wrong impeller is fitted Damaged or worn bearings / seal 1 HP control fitted to 2 HP motor Windings partially shortened
LO V*	Under Input Voltage	Mains voltage is too low due to: <ul style="list-style-type: none"> Poor supply to site Excessive cable length or undersized cable (large voltage drop) Load on circuit too great (i.e. Air conditioner on circuit) The XT pump will attempt to run when the voltage is too low (with slightly reduced speed), but will stop while displaying Lo V if below 200 VAC.
BSUC	Motor is Stuck	Rotor is stuck or stiff enough to prevent starting, or two phases are short-circuited. The cause is normally a mechanical fault. Repair the motor before the controller.

Section 9. Spare Parts

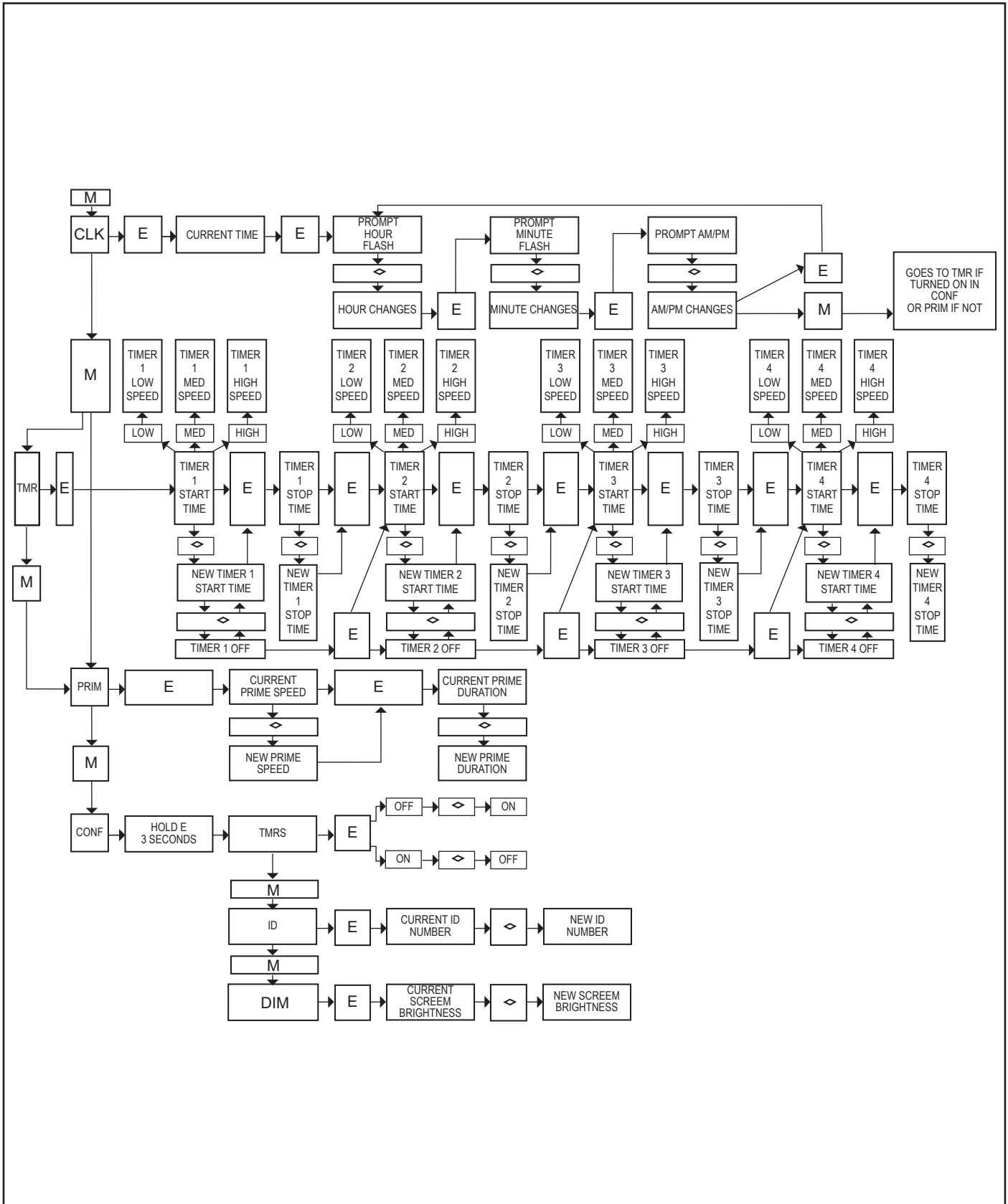
9.1 Model P320XT and P520XT



9.2 Model P320XT and P520XT Spare Parts List

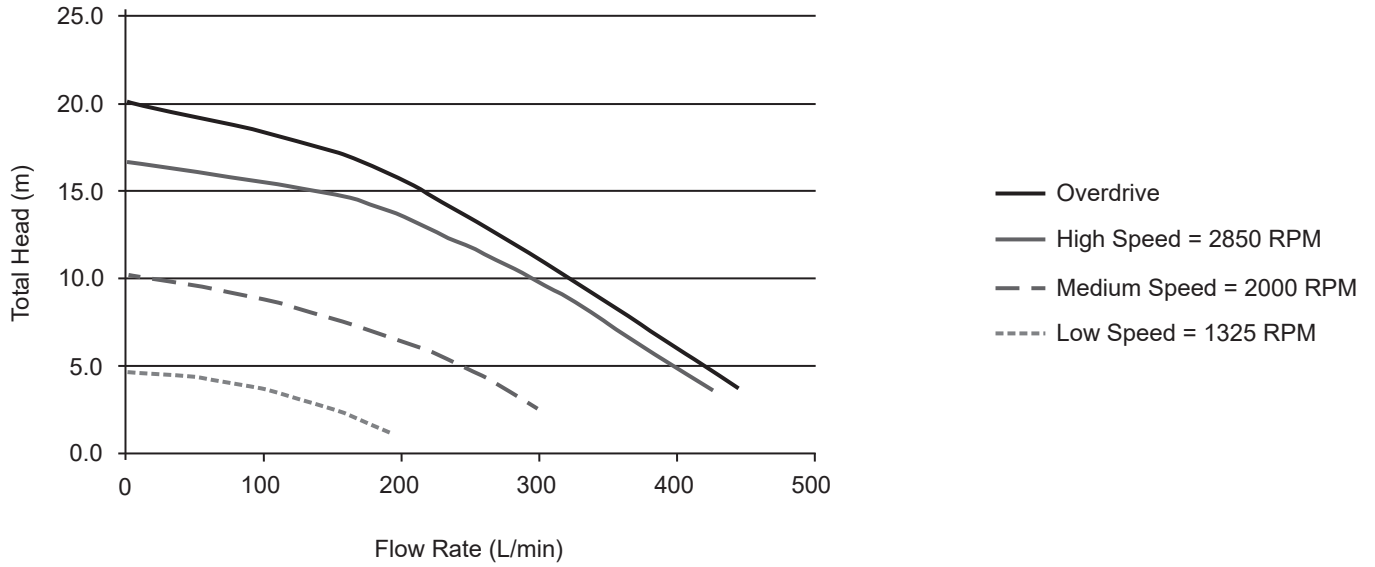
Item #	Description	Part #	Quantity
1	LID COMPLETE WITH O-RING	40089	1
2	LID O-RING	70006	1
3	BASKET	40065	1
4	PIPE FITTING COMPONENT BAG	78303	1
5	CHECK VALVE ASSEMBLY	598770	1
6	PUMP WET END	40097	1
7	O-RING	70003	2
8	O-RING FOR DIFFUSER	78104	1
9	DIFFUSER – XT 320	40071A	1
9	DIFFUSER – XT 520	40071B	1
10	IMPELLER – P320	40060X	1
10	IMPELLER – P520	40060Z	1
NOT SHOWN	IMPELLER RETAINING BOLT	78187	1
NOT SHOWN	O-RING	78711	1
11	MECHANICAL SEAL	75509	1
12	O RING (SEAL PLATE)	70022	1
13	SEAL PLATE	40098	1
14	SEAL PLATE TO WET END BOLTS	78772	6
15	MOTOR RETAINING BOLT	40156	4
16	MOTOR FOOT	4005002	1
16	MOTOR FOOT RUBBER INSERT	40056	1
17	MOTOR PLASTIC FAN COWL	70600	1
18	CONTROLLER REAR COVER	70603	1
18	REAR COVER RETAINING SCREWS	40145	2
19	MOTOR COOLING FAN	40285	1
19	RETAINING CLIP –COOLING FAN	40285C	1
20	CONTROLLER – P320	21488	1
20	CONTROLLER – P520	21489	1
21	DRAIN PLUG	7820702	2
21	O-RING	78103	2
22	MOTOR – P320	71460	1
22	MOTOR – P520	71462	1
23	CONTROLLER LABEL	LABEL311	1
NOT SHOWN	XT LABEL	LABEL518	1
NOT SHOWN	PIPE FITTING COMPONENT BAG	78303	1

Section 10. Viron XT Pump Control Flow Diagram

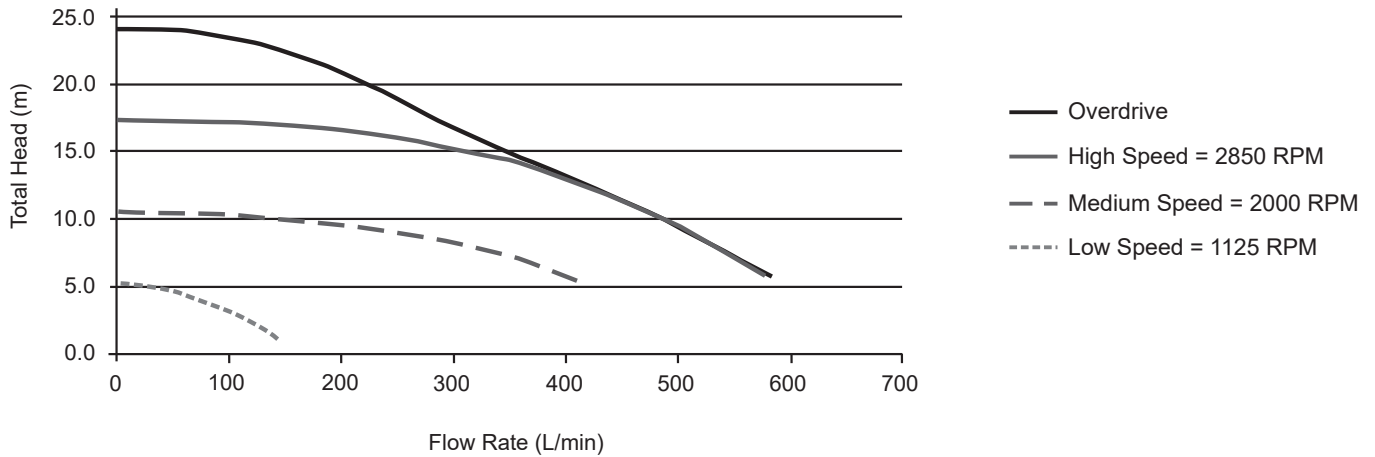


Section 11. Performance Curves

11.1 Model P320XT



11.2 Model P520XT





INST434

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