



PUMPS AUSTRALIA

BETTER • FASTER • EASIER

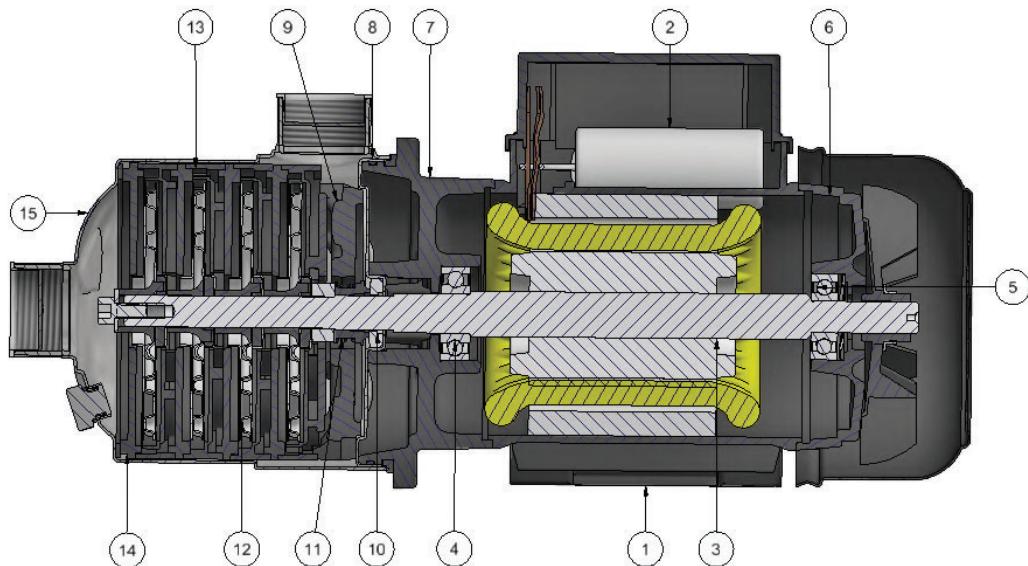


## VARIABLE SPEED MULTISTAGE PUMP

EXPLODED VIEW &  
INSTRUCTION MANUAL

**MODELS:** VSRE40-60 | 38-110 | 52-110 | 67-120 | 50-175 | 65-175 | 46-350  
**CODE:** 21620 | 21637 | 21644 | 21651 | 21668 | 21675 | 21682

# COMPONENTS & MATERIALS



MULTISTAGE PRESSURE PUMP

POSITION	COMPONENT	MATERIAL
1	Stator on Casing	-
2	Capacitor	-
3	Rotor/Shaft	Steel & Aluminium   Stainless Steel
4	Bearing	Steel
5	Bearing	Steel
6	Cover	Aluminium
7	Intercalate	Aluminium
8	Disc	Stainless Steel
9	Initial Diffuser	Noryl
10	Mechanical Seal Fixe	Nitrile Rubber/Ceramics
11	Mechanical Seal Mobile	Graphite Steel
12	Impeller	Stainless Steel
13	Diffuser Lid Welded	Noryl
14	Diffuser Cover	Noryl
15	Pump Body	Stainless Steel

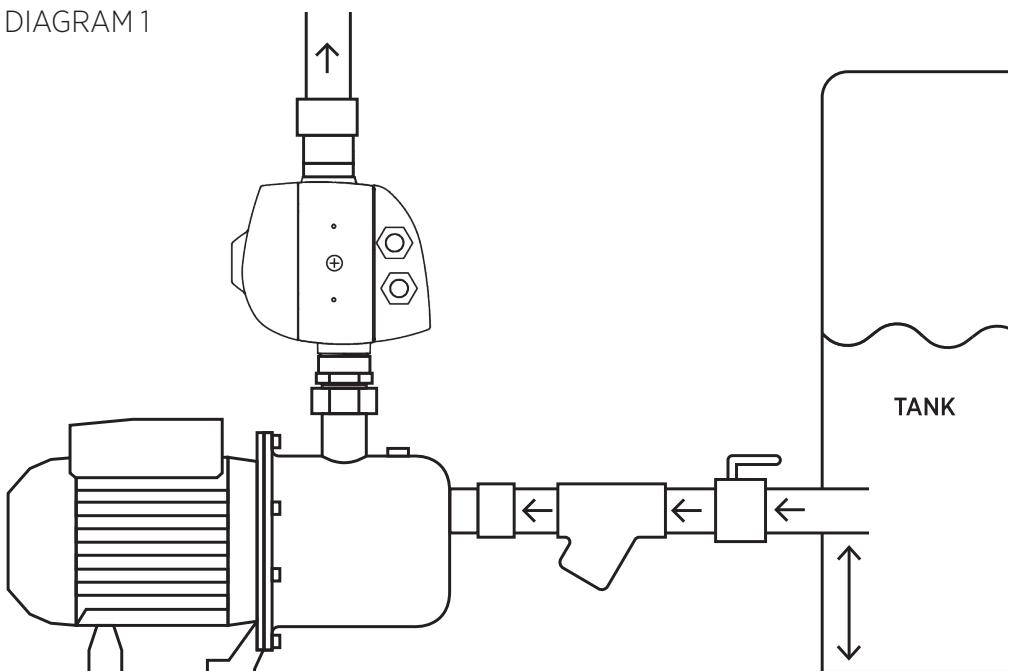
# INSTRUCTION | INSTALLATION MANUAL

# CORRECT INSTALLATIONS

**ALWAYS INSTALL YOUR PUMP ON A LEVEL CONCRETE OR PAVED SURFACE!**



## DIAGRAM 1



## TIP!

PRESSURE TANKS  
CAN SAVE YOU  
MONEY AS THE  
PUMP DOES NOT  
HAVE TO START SO  
OFTEN.

## KEY

- (1) BARREL UNION
- (2) Y-STRAINER OR PRE-FILTER
- (3) BALL VALVE OR GATE VALVE

**TIP!** CLEAN THE Y-STRAINER MONTHLY TO ENSURE PEAK PERFORMANCE. SIMPLY UNDO THE BUNG AND LET IT FLUSH OUT. MAKE SURE YOU RE-FIT THE MESH FILTER.

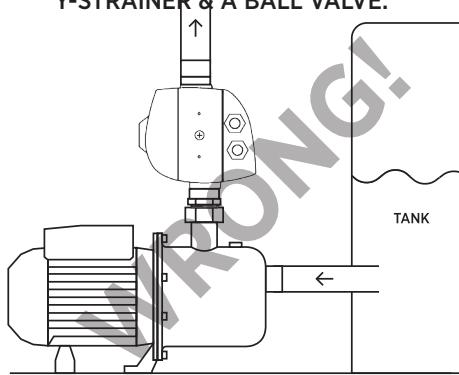
**TIP!** IF PUMP STARTS FREQUENTLY, CHECK TOILET CISTERNS, THEY ARE PROBABLY LEAKING.

**IMPORTANT! MULTISTAGE PUMPS MUST NOT BE USED WITH SUCTION LIFT.**

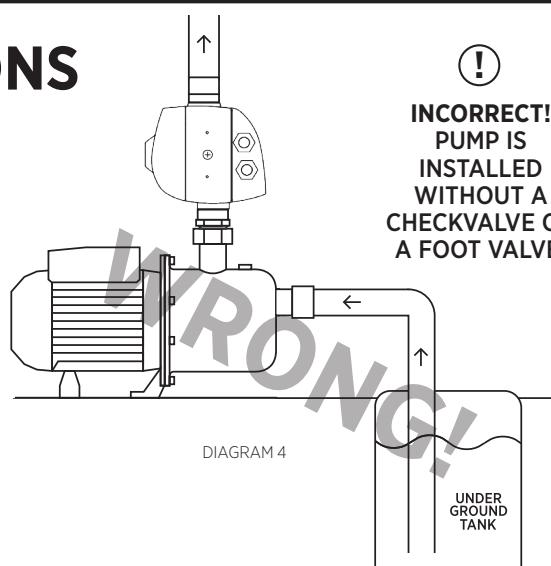
DIAGRAM 3

# INCORRECT INSTALLATIONS

**! INCORRECT! PUMP IS INSTALLED  
WITHOUT BARREL UNION'S, A  
Y-STRAINER & A BALL VALVE.**



**INCORRECT!**  
PUMP IS  
INSTALLED  
WITHOUT A  
CHECKVALVE OR  
A FOOT VALVE.



#### DIAGRAM 4

# INCORRECT INSTALLATIONS CONT.

! INCORRECT! THE PUMP IS CONNECTED INCORRECTLY. ALWAYS ENSURE WATER INLET AND OUTLET ARE CORRECT.

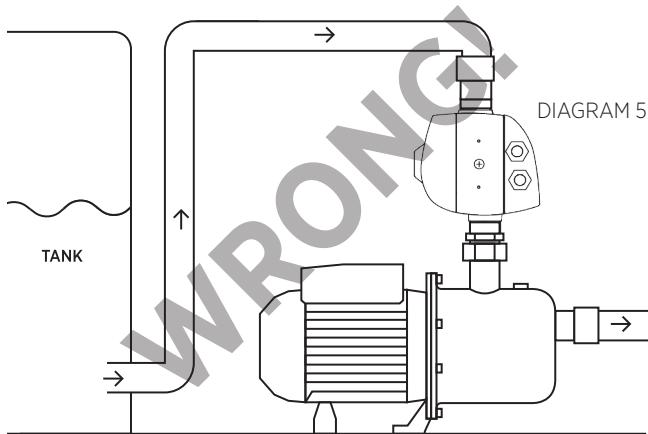


DIAGRAM 6

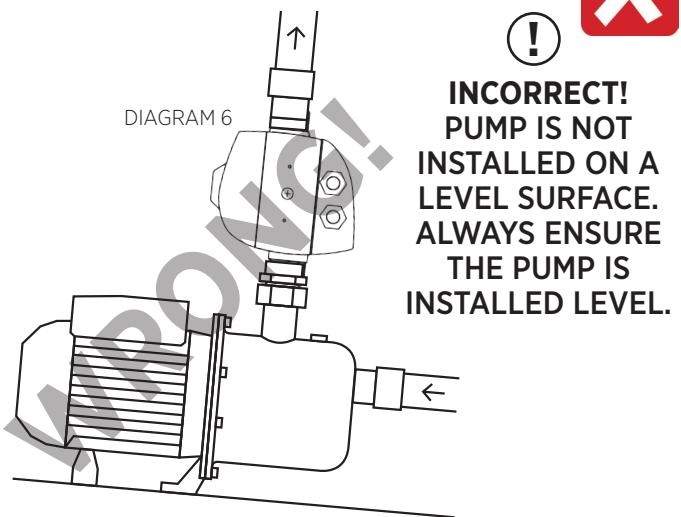
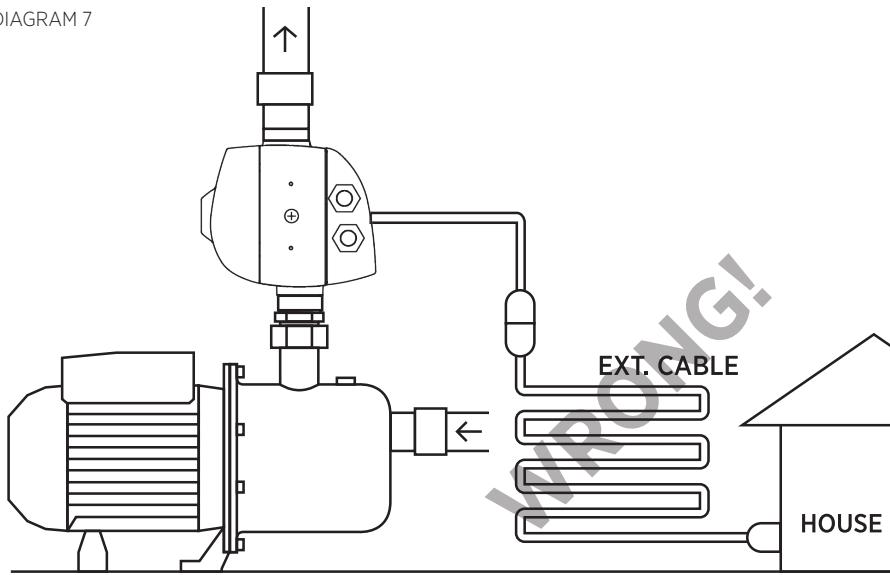


DIAGRAM 7

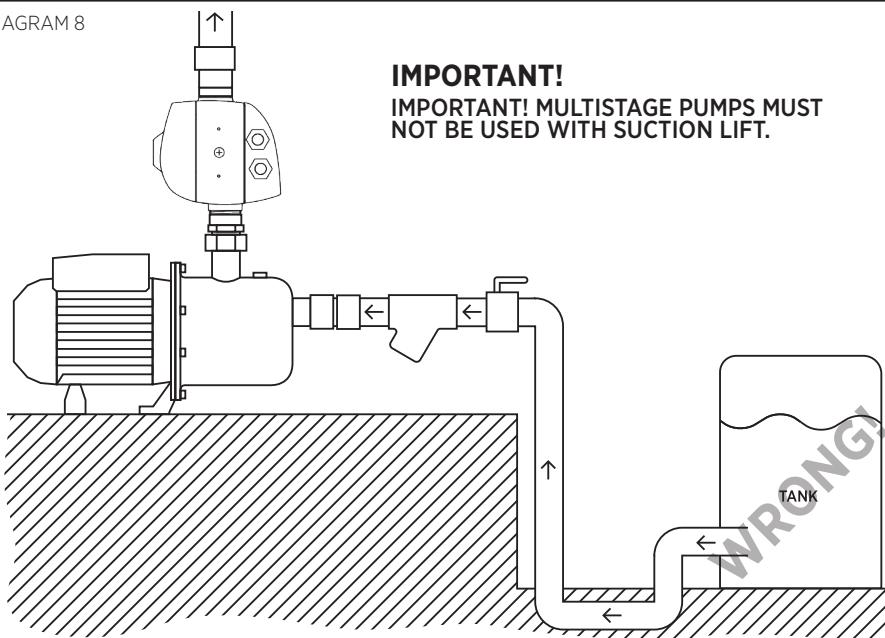


! INCORRECT! DON'T USE EXTENSION LEADS.

NEVER USE AN EXTENSION CABLE TO CONNECT THE PUMP TO MAINS POWER.

ALWAYS CONNECT PUMP DIRECTLY TO DEDICATED POWER OUTLET.

DIAGRAM 8



## IMPORTANT!

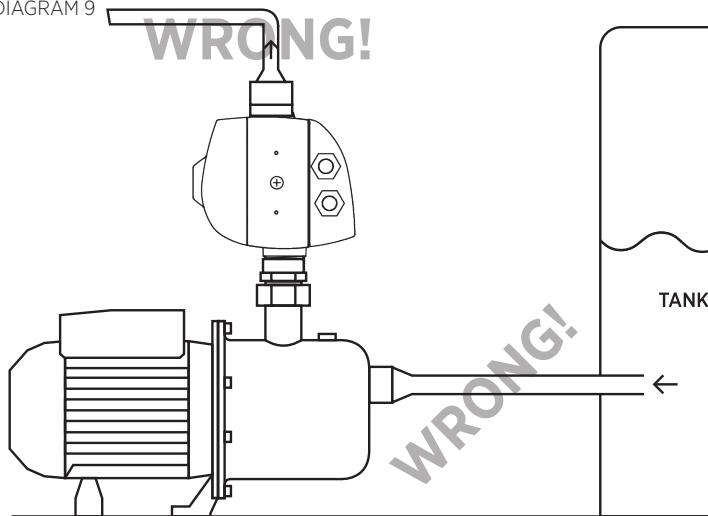
IMPORTANT! MULTISTAGE PUMPS MUST NOT BE USED WITH SUCTION LIFT.



! INCORRECT! NO FOOT VALVE!

FOR INSTALLATIONS WHERE THE PUMP IS ABOVE THE OUTLET OF THE TANK, ALWAYS USE A FOOT VALVE IN THE TANK.

DIAGRAM 9



### INCORRECT! PIPES TOO SMALL!



FOR PUMP INLET, USE 25mm PIPE (INTERNAL DIAMETER). WE RECOMMEND 30mm FOR BEST PERFORMANCE. (FOR PUMPS WITH 32MM INTAKE OR LARGER, USE SUCTION PIPE ONE OR MORE SIZE LARGER).

For the outlet (discharge) pipework, use pipe that is the same diameter as the outlet of the pump, or NO MORE THAN ONE SIZE SMALLER. **BIGGER PIPE = BETTER PERFORMANCE**

PLEASE READ THE INSTRUCTIONS FOR MORE DETAILED INSTALL INFORMATION.

### IMPORTANT

FOR VERY LONG SUCTION/INTAKE PIPEWORK, IT IS CRITICAL THAT THE CORRECT PIPE SIZE IS USED ESPECIALLY IN SUCTION-LIFT APPLICATIONS, CHECK WITH A QUALIFIED PUMP TECHNICIAN FOR THIS TYPE OF INSTALLATION.

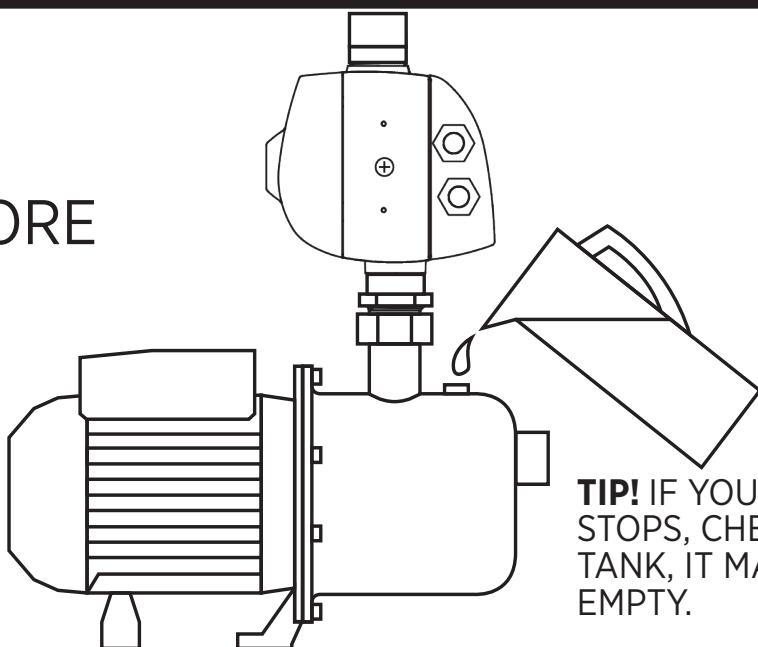
DIAGRAM 10

**IMPORTANT!**  
ALWAYS PRIME  
THE PUMP BEFORE  
STARTING.



### TIP

SOMETIMES YOU MAY HAVE TO DO THIS AFTER THE PUMP HAS STOPPED DUE TO THE TANK BEING EMPTY OR LOW IN WATER.

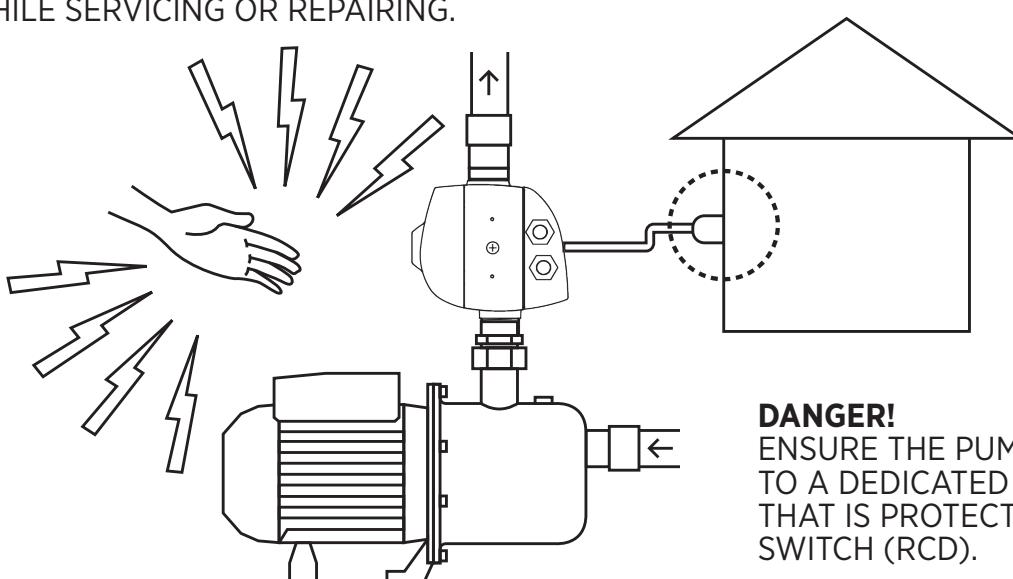


**TIP!** IF YOUR PUMP STOPS, CHECK YOUR TANK, IT MAY BE EMPTY.

DIAGRAM 11

### DANGER!

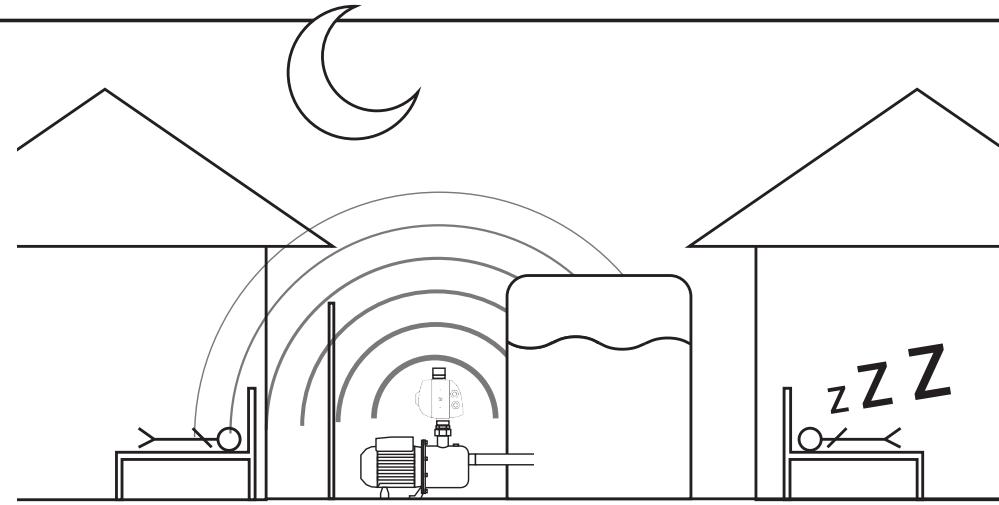
ALWAYS DISCONNECT THE PUMP FROM POWER WHEN INSTALLING, AND WHILE SERVICING OR REPAIRING.



### DANGER!

ENSURE THE PUMP IS CONNECTED TO A DEDICATED POWER OUTLET THAT IS PROTECTED BY A SAFETY SWITCH (RCD).

DIAGRAM 12



## IMPORTANT

CONSIDER  
NEIGHBOURS WHEN  
INSTALLING THE PUMP.  
ALL PUMPS MAKE  
SOME NOISE.

DIAGRAM 13



**IMPORTANT - DO NOT EXPOSE THE PUMP DIRECTLY TO THE ELEMENTS.  
WE RECOMMEND THE PUMP IS PROTECTED WITH A PUMP COVER.**

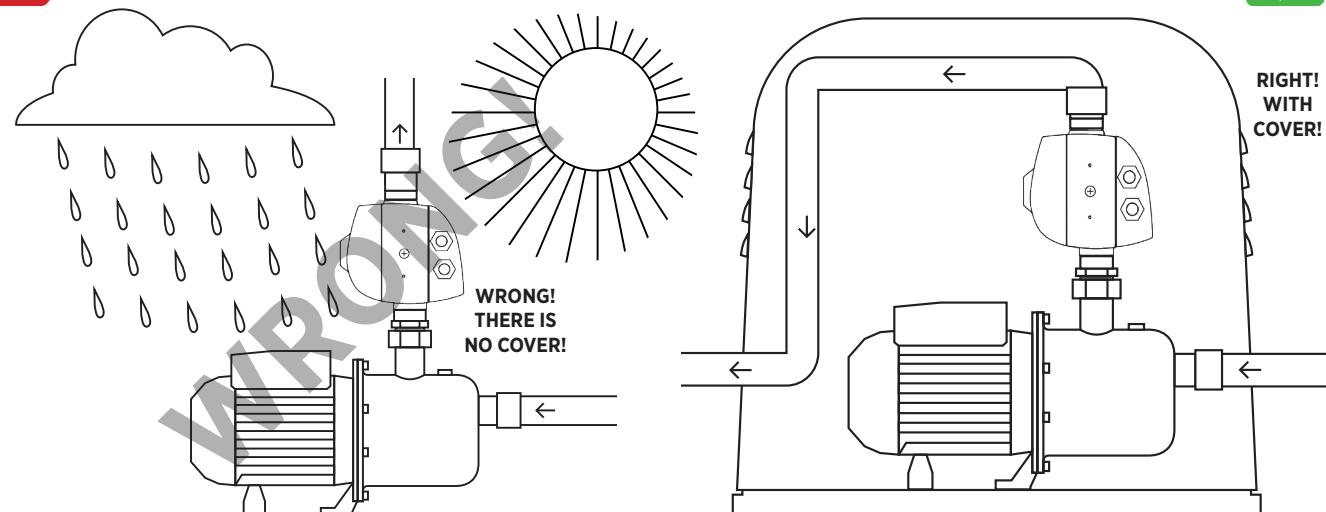


DIAGRAM 14



**IMPORTANT! ENSURE THE PUMP IS SIZED CORRECTLY FOR THE JOB. TOO SMALL = LOW PERFORMANCE AND MAY USE EXCESS POWER, AND/OR OVERHEAT THE MOTOR AND/OR CAUSE PREMATURE FAILURE. THIS IS NOT A WARRANTY FAULT IF THIS OCCURS.**

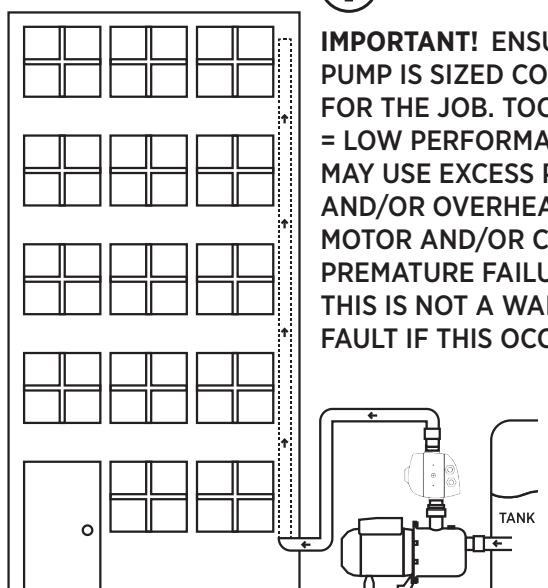
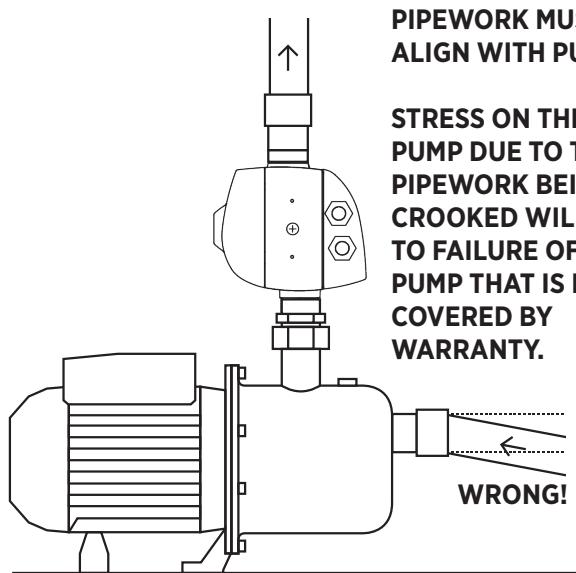


DIAGRAM 15



**PIPEWORK MUST ALIGN WITH PUMP!**

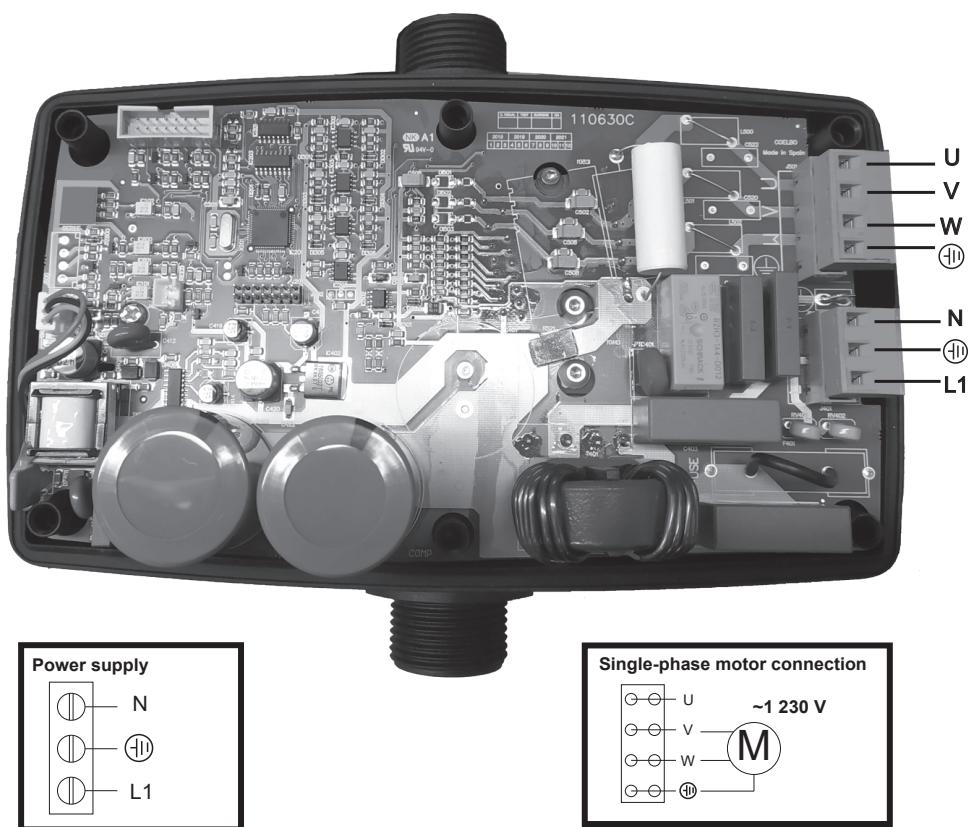
**STRESS ON THE PUMP DUE TO THE PIPEWORK BEING CROOKED WILL LEAD TO FAILURE OF THE PUMP THAT IS NOT COVERED BY WARRANTY.**



**MODELS:** VSRE 36-60 | 38-110 | 52-110 | 67-120

**VSC1-7.5**

COMPONENTS &  
**MATERIALS**

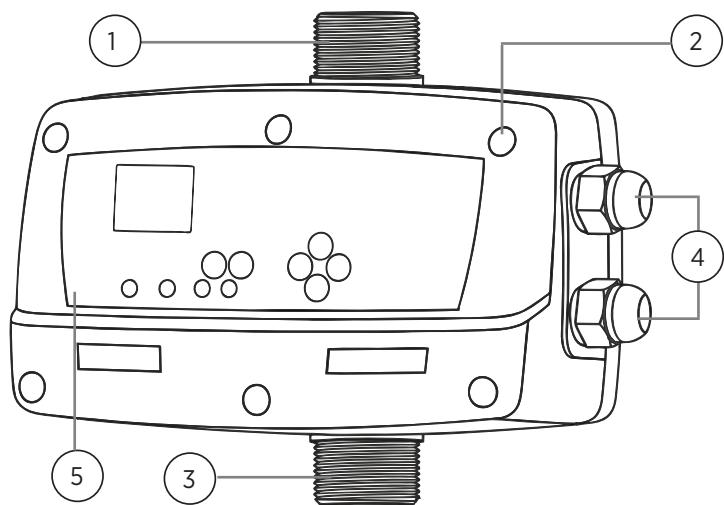


VARIABLE SPEED DRIVE

**POSITION** **COMPONENT**

**MATERIAL**

1	Outlet - 1" Thread	Polymer
2	Casing -Reinforced	UV Resistant Polymer
3	Inlet, 1" Thread	Polymer
4	Power In-Out Connections	-
5	Display Board	-



# WARRANTY | INSTRUCTION MANUAL

BEFORE INSTALLATION AND USE READ THE FOLLOWING INSTRUCTIONS CAREFULLY. THE MANUFACTURER DECLINES ALL RESPONSABILITY IN THE EVENT OF ACCIDENT OR DAMAGE DUE TO NEGLIGENCE OR FAILURE TO OBSERVE THE INSTRUCTIONS DESCRIBED IN THIS MANUAL OR IN CONDITIONS THAT DIFFER FROM THOSE INDICATED ON THE DEVICE. TECHNICAL MODIFICATIONS RESERVED

## 1. OPERATION

The REEFE Variable Speed Controller (VSC) is an automatic pump controller designed for the control of single-phase or three-phase pumps (depending on model). The VSC Controller includes an electronic system managed by software which responds to the rigorous requirements of efficiency and safety of pumps. It includes a frequency inverter that regulates the speed of the pump in order to keep the pressure constant independently of the flow provided from the pump.

The system incorporates a LCD screen where the parameters configuration is very easy to view. Once the configuration parameters are set and confirmed, the device manages the start-up of the pump and the frequency inverter. It ensures a constant pressure and an important cost reduction because at any time the control will feed the system with the right and necessary output, obtaining a maximum energy efficiency. In order to establish the ideal pressure in the installation is suitable to consider following criteria:

Hm: Max. water column height in m. It depends on the number of floors and it corresponds to the height from the pump to the last floor. Every 10 m of height corresponds approximately to 1 bar (0.98) bar.

Pw: Available minimum pressure in last floor (usually 1.5 bar).

Pc: Pressure drop. An average allowance is 0.033 bar/m (this can depend on the pipework installed).

Prmin: Minimum resultant pressure. It is the sum of the previous pressures and it will be the operating pressure of the pump. Example for a 5 floors building (15 m) with pump placed at level 0:

$$Hm = 15 \text{ m} @ 1.5 \text{ bar} \quad Pw = 1.5 \text{ bar} \quad Pc = 15 \times 0.033 \text{ bar} @ 0.5 \text{ bar} \quad Prmin = 1.5 + 1.5 + 0.5 = 3.5 \text{ bar}$$

## MASTER AND SLAVE OPERATION

The group MASTER-SLAVE is constituted by a Controller - responsible for the group's control - and a Controller configured as SLAVE controlled by the master device (VSC1-7.5 does not have MASTER-SLAVE compatibility).

Due to the alternating sequence of operation, the VSC Controller configured as MASTER begins the first cycle as the MAIN device - its pump is the first to start - but in the next cycle it becomes SECONDARY - its pump is the second to start - and so on. Therefore, the fact that a device is configured as MASTER involves control of the group but this fact does not avoid its work alternately as SECONDARY device.

## 2. CLASSIFICATION AND TYPE

According to EN-60730-1 this product is a device of independent assembly, type 1B with software of class A. Control circuit for alternating current motor with power factor  $\cos \geq 0.6$ . Pollution Degree 2. Rated impulse voltage: 2500V/CATII. Class of disconnection 1Y (electronic disconnection).

## 3. MAIN CHARACTERISTICS.

DN inlet port 1" or 1 1/4" BSP male ISO 228.

DN outlet port 1" or 1 1/4" BSP male ISO 228.

Frequency inverter for the pump control.

Control and safety system against over-intensities.

Control and safety system against dry operation.

REEFE Automatic Restart (RAR). If the device has been stopped due to the action of the safety system against over-intensities, the RAR tries to connect the pump, with a programmed periodicity because the water supply could have been restored or still available.

Automatic restore system after an interruption of power supply. System is activated in AUTOMATIC mode keeping the configuration parameters (see "CONFIGURATION" chapter).

Internal pressure transducer.

Control panel (see chapter 7): 2 digits display, pushbuttons, led lights and digital gauge providing instantaneous and heads up display.

Register of operational controls: information about operating hours, counter of starts, counter of connections to the power supply.

Connections for detection of minimum water level in aspiration tank. This system is independent of the safety against dry operation. Is optional.

Register of alarms: information about type and number of alarms since the starting up of the device.

## 4. HYDRAULIC CONNECTIONS (fig. 2 and 3)

Before proceeding with hydraulic connection it is essential to install a non-return valve in the pump's inlet.

The VSC Controller must be connected in vertical position (diag.3), the inlet port directly to the main pump discharge and the outlet port at the main network.

It is compulsory to use an pressure tank in order to avoid continuous start-stops due to the deterioration of taps, valves, ... and also to prevent "water hammer" in installations with valves of wide diameter.

## 5. ELECTRIC CONNECTION (fig. 1)

Before doing modifications inside the device, it should be disconnected from the electrical supply and after disabling, wait for 2 minutes in order to avoid electrical discharges (all electrical connections and directions below must be carried out by a licensed electrician).

Use cables type H07RN-F with section enough to the power installed:

Power supply: 1,5 mm<sup>2</sup>(max.2,5 mm<sup>2</sup>).

Motor supply: 1 mm<sup>2</sup> (max.2,5 mm<sup>2</sup>) depending on the cable length (see fig.1).

Verify if the power supply is 220/240 V. Dismount the back cover and carry out the connections according to the indications of fig. 1.

Do the power supply connection (make sure there is a good earth connection): L1 L2 Do the connection by mean of a suitable 3 Pin Approved Power Plug in OFF mode.

The earth conductor must be longer than the others. It will be the first one to be mounted during the assembly and the last one to disconnect during disassembling.

Do the pump connection.

Min. level control (optional). There is an input for stopping the pump as soon as is disconnected the external switch of minimum level. Connection of 2 devices (optional): for the communication of 2 devices it will be used a cable of 4x0.25 mm<sup>2</sup>, it will be inserted throw the PG cable gland located in the bottom/lateral of the device. See Fig.9.

**WARNING!** Wrong connections could spoil the electronic circuit. The manufacturer declines all responsibility in damages caused by incorrect connection.

## 6. START UP (plug & play).

Be sure that the pump is correctly primed

Connect the VSC Controller to the electric supply with the 3 Pin Power Plug, all the led lights will flash instantaneously for a second. Screen will show SP (set pressure) and then its default value 2,0 bar, both displays are alternated in time periods of 1 and 5 seconds.

By pressing the **▲▼** buttons we can adjust the desired set pressure for the application. Be sure to not set the pressure higher than 85% of the maximum pump pressure, the pump will never turn off if the pressure is set too high. Warranty is VOID if pressure is set too high.

Press the push-button AUTO, the device will start to operate and led light AUTO ON/OFF will turn on. The screen will show the current system pressure. Being in automatic mode and using the push-buttons we can change the following displays:

P: Current system pressure (bar).

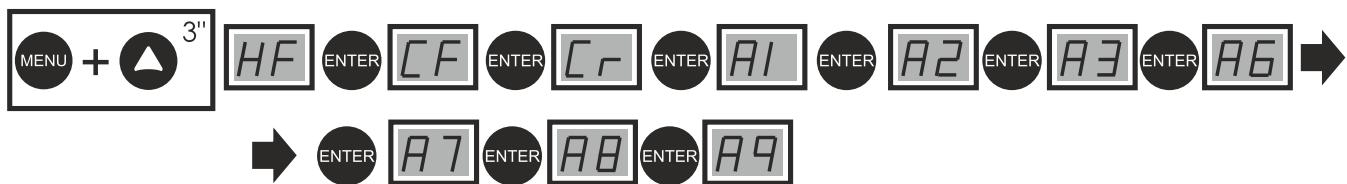
Fr: Current Speed speed (Hz).

A: Current amperage consumption (Amps).

	1. Press push-button MENU for 3 seconds to start the configuration sequence.	
	2. Input the nominal intensity value in Amps using pq enabling the thermal protection. For VSC1-7.5 must be within 0 and 7.5 A. This value is located over the characteristics plate of the motor. Press ENTER for validation.	
	3. Using ▲ this value can be changed to lower/increase the speed of rotation (speed of pump start up). This can be helpful if there are potential leaks in the line, or long/short runs of pipework. The value must be within 30 and 35 Hz. Default value is 30 Hz. Press push-button ENTER, for validation and quit this menu.	
	4. System is ready. By mean of AUTO ON/OFF quit the manual operating mode.	

## 7. REGISTER OF OPERATION DATA AND ALARMS.

By simultaneously holding down buttons MENU + ▲ for 3 seconds the user can report on the REGISTER OF OPERATION DATA AND ALARMS, by pressing ENTER we can advance through the sequence, once finished the sequence we come back to the main display. This is all the sequence:



- REGISTER HOURS (HF). Count of total time that the pump has been operating.
- REGISTER STARTS (CF). Number of cycles of operation, a cycle is a start and a stop.
- REGISTER SWITCH (Cr). Number of connections to the electric supply.
- ALARM COUNT DRY RUN (A1). Number of dry-running alarms.
- ALARM COUNT I MAX (A2). Number of overcurrent alarms.
- ALARM COUNT. DISCONNECTED PUMP (A3). Number of disconnected pump alarms.
- ALARM COUNT. TEMP (A6). Number of alarms by excessive temperature.
- ALARM COUNT. SHORTCIRCUIT (A7). Number of short circuit alarms.
- ALARM COUNT. OVERVOLTAGE (A8). Number of overvoltage alarms.
- ALARM COUNT. UNDERVOLTAGE (A9). Number of undervoltage alarms.

All the records are saved even if the device has been disconnected from the electric supply.

Note: For quantities with more than 2 figures they will appear in consecutive screens after each ENTER. For example, to indicate 10234 overcurrent alarms:



## 12. ALARMS

In case of simultaneous alarms, quit the automatic mode and go to manual mode, pressing the pushbutton AUTOMATIC ON/OFF (led light PUMP will turn off). Using key ▲▼ will be displayed the successive alarms. Once visualized, for leaving the menu, press ENTER returning to MANUAL mode.

#### **A1 DRY RUNNING (\*Failure verification •Final failure)**

DESCRIPTION: if the system detects dry running for more than 10 seconds, it will stop the pump and the RAR will be activated.

SYSTEM REACTION: after 5 minutes the RAR system will again start the pump after 30 seconds, trying to restore the system. In case of persistent lack of water, it will try it again every 30 minutes for 24 hours. If after all these cycles, the system still detects lack of water, pump will remain permanently out of order until the damage will be repaired. The user will need to turn off and restore the power for the pump to be active again.

SOLUTION: dry running, it has been activated the safety system: you should verify the feeding of the hydraulic network. The pumps can be primed using the push-button START/STOP (the led light AUTOMATIC should be off, if it is not, press the push-button to disable it).

NOTE: if the pump cannot provide the programmed pressure (configuration mistake) the VSC Controller reacts as it was dry-running.

NOTE 2: this device manages the dry running control through the nominal current consumption of the pump. Confirm the current consumption in the setup menu (see paragraph 9).

#### **A2 OVER-INTENSITY(\*Failure verification •Final failure)**

DESCRIPTION: the pump is protected against over currents by mean of the intensity values established in the installation menu. These over currents are produced generally by dysfunctions in the pump or in the electric supply.

SYSTEM REACTION: when detecting the thermal failure, the pump will be automatically stopped. The system will try again to restart the pump when the demand of consumption is required. The control system will carry out 4 attempts in this circumstance. If the system remains locked after the 4th attempt, the pump will remain definitively out of order.

SOLUTION: Check the state of the pump, for example the impeller could be blocked. Check intensity values set in the configuration menu. Once the problem has been solved the operation will be restored going to the "SET UP" menu (see the Controller Parameter Settings) and configuring the input intensity values.

#### **A3 DISCONNECTED P. (•Final failure)**

DESCRIPTION: the VSC Controller has an electronic safety system in case of no load detection.

SYSTEM REACTION: the device is disconnected..

SOLUTION: the wound of the motor and the pump consumption should be verified. Once the problem has been solved the operation will be restored going to the "SET UP" menu (see the Controller Parameter Settings) and introducing the adequate intensity values. Verify the fuses (see fig.3), in case of possible failure. Contact with technical service.

#### **A5 TRANSDUCER (•Final failure)**

DESCRIPTION: the transducer damages are showed in the VSC Controller's LCD screen.

SYSTEM REACTION: the device operation is interrupted.

SOLUTION: Power off for 5 minutes and back on again. If problem persists, contact with technical service.

#### **A6 EXCESSIVE TEMP. (•Final failure)**

DESCRIPTION: the system has a cooling device to keep the INVERTER in optimum working conditions.

SYSTEM REACTION: if an excessive temperature is reached the own system leaves the inverter out of service and as consequence the pump too.

SOLUTION: verify the temperature of the water, it should be under 40 °C and the temperature environment should be under 50 °C. Contact with technical service.

#### **A7 SHORTCIRCUIT (•Final failure)**

DESCRIPTION: the VSC Controller has an electronic system for protection against short circuits as well as peaks of current.

SYSTEM REACTION: the pump remains stopped for 10 seconds. Then it starts again - 4 attempts. If the problem is not solved, the pump will remain definitively out of order.

SOLUTION: check the pump for potential issues and blockages, if the problem persists, contact the technical service.

#### **A8 OVERVOLTAGE - A9 UNDERVOLTAGE (\*Failure verification)**

DESCRIPTION: the VSC Controller has an electronic safety system to protect against overvoltages and too low supply voltages.

SYSTEM REACTION: in case of overvoltage or undervoltage the system remains stopped until an adequate value of voltage is reached. In this case, the system is automatically restored.

SOLUTION: Get an electrician to check the power supply for voltage fluctuations. This alarm may be something seen regularly when using with a Generator or known inconsistent power supply.

**DESCRIPTION: blank screen.**

**SOLUTION: check the electric supply 240V. In case of being in right conditions, the general fuse, located in the main plate (fig 1) should be verified.**

#### **INSTALLATION CHECKLIST: MUST BE FILLED IN FOR WARRANTY TO APPLY**

PURCHASER NAME & ADDRESS..... PHONE NO.....

DATE OF PURCHASE ...../...../..... DEALER/STORE NAME.....

DEALER SUBURB/TOWN..... PHONE NO.....

BRAND & MODEL NUMBER OF PUMP..... BATCH or SERIAL NUMBER.....

Do NOT send this form to us, retain it for your record.

#### **INSTALLATION CHECKLIST: MUST BE FILLED IN FOR WARRANTY TO APPLY**

Installer Name \_\_\_\_\_ Qualification: \_\_\_\_\_ (write Owner if applicable)

Phone Number: \_\_\_\_\_ If installed by a Plumber or Electrician, Licence No:\_\_\_\_\_

Installation Address: \_\_\_\_\_

**Tick the boxes as the item is completed/correct, put n/a if not applicable:**

- [ ] The Pump that the Pump Controller is fitted to is no larger than 1.5kW / 8Amp and has a 240V motor.
- [ ] The Pump & Pump Controller are being used for an appropriate purpose for which it is intended, according to the instructions
- [ ] The Power Circuit the Pump & Pump Controller is connected to is RCD (Safety Switch) Protected
- [ ] The Pump Controller is installed upright, as per Figure 1, page 1
- [ ] A Y-Strainer or Pre-filter is installed in the suction pipe to prevent particles entering the Pump & Pump Controller, or for submersible pumps, between the pump and the controller.
- [ ] Barrel Unions are fitted on the pipe connections for easy removal & replacement
- [ ] A Ball Valve or Gate Valve is fitted to the suction pipe (the pipe from tank to pump)
- [ ] Pipe is sized appropriately for the application (diameter and length)
- [ ] The installation is constructed so the Pump & Pump Controller can be easily removed or replaced.
- [ ] If applicable: The Pump & Pump Controller is installed in accordance with National & Local Plumbing Regulations
- [ ] The Electrical Supply cable is plugged into a Power Outlet that is in accordance with the current standard of Electrical Safety Regulations AS/NZS 3000 - or the Pump & Pump Controller has been wired directly to the power circuit by a Licensed Electrician.
- [ ] The Pump has been primed (filled with water) started, tested, and operates correctly.
- [ ] The suction & discharge pipes, connections, barrel-unions, and toilet cisterns (if connected) have all been checked for leaks.
- [ ] The Pump & Pump Controller is protected from sunlight & rain, with a suitable vented pump-cover or enclosure.
- [ ] If applicable: The Owner has been shown how to re-prime and re-set the pump (re-fill the pump with water if it runs dry)

Signed by the Installer: \_\_\_\_\_

Date Installed: / /

## **12 MONTH WARRANTY CONDITIONS**

1. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. If you are a consumer as defined by the Australian Consumer Law, you are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. The following conditions form part of the instructions and do not over-ride your statutory rights.
2. This warranty against defects covers failure due to manufacturing defects within a 12 month period from the date of original purchase, for Pump Controllers purchased from Ascento and used in mainland Australia. In the case of a failure covered by warranty within a 12 month period from the date of original purchase, the Pump Controller will be repaired or replaced - or you can return it to the place of purchase for a refund.
3. Faults or losses or failure caused due to: Accidents, misuse, lack of maintenance, not following these instructions, damage caused by lightning strike/power surges/spikes/brownouts/operating the Pump Controller on power other than 240volts 50Hz mains power/operating the pump on power supplied by a domestic generator - are not covered by warranty.
4. The warranty only covers the Pump Controller, it does not include the Pump that it is connected to, refer to the supplier of that pump.
5. Warranty will be void if any tampering or removal of identification labels or electrical cables has occurred, or any non-genuine parts have been fitted, or repairs have been carried out by unqualified persons. No warranty applies for goods sold or used for HIRE or RENT or LEASE. No warranty applies, and no liability is accepted, if the pump controller is used in circumstances that we define as: HAZARDOUS SITUATIONS, MINE SITE, REMOTE AREA, INDUSTRIAL APPLICATION, or any other UNSUITABLE APPLICATION, all of these circumstances are defined by us at our sole discretion.
6. If an exact replacement is not available, the closest equivalent product will be supplied at our discretion.
7. This product is guaranteed as fit for the purpose of starting & stopping suitable sized pumps that are used for CLEAN FRESH WATER and for NO OTHER USE. Performance data quoted is generally from test data and does not take into account factors in the installation such as loss of pressure and flow due to pipework & pipe-fittings & valves.
8. **IMPORTANT:** No electrical appliances last forever. Therefore ALL installations must be constructed to allow the owner to easily remove the Pump Controller for servicing, and to easily remove for replacement, warranty replacement or upgrading. The installation must NOT be constructed in such a manner that specialized tools, or paid tradespersons, or external paid contractors, are required to be engaged in order to remove and/or replace and/or refit the Pump Controller. Warranty replacement does not normally include costs of removal and re-installation as we have no control over the method of installation.
9. Before installing or servicing disconnect from the power supply. All pumps & Pump Controller must be installed using barrel-union connections to facilitate easy servicing or replacement. A ball-valve or gate-valve must be fitted on the suction, and the Town-water backup supply where fitted. Additionally a Y-Strainer or Pre-filter must be installed on the suction to prevent particles entering the pump. This instruction is a condition of warranty; all warranty is void if this instruction is not followed.
10. This Pump Controller is not to be used as your sole water supply. For critical applications where loss of water supply could cause serious consequences, use a DUAL PUMP System so you have a backup water supply or use a TOWN-WATER BACK-UP System.
11. This Pump Controller MUST NOT be installed in any manner that if it were to leak that it would cause damage or loss to property or persons. It MUST be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition.
12. The Pump & Pump Controller must be connected to a suitable circuit with an integral RCD (safety switch) in the circuit breaker. All warranty is void if this instruction is not followed.
13. In the case of a fault, refer to the Trouble Shooting Guide first. If these steps do not rectify the problem, then return the faulty appliance to the original place of purchase with proof of purchase, and the installation checklist above, for replacement or refund. Alternatively you can mail us at PO BOX 650 MORNINGSIDE QLD 4170 or send an email to [sales@ascento.com.au](mailto:sales@ascento.com.au) with copy of your purchase receipt, and the installation checklist above, a description of the problem, and your name and address and phone number - we will review your request and send you a replacement directly if we accept your warranty claim. Or call us on 1800807604 with the above information; however we will always require a copy of your purchase receipt and the installation checklist above. Do not send the product to us unless we ask you to do so.
14. This warranty does not exclude any non-excludable rights according to Australian Law. However any condition that is made void by Australian Law does not void the remaining conditions, which shall stand unaltered.

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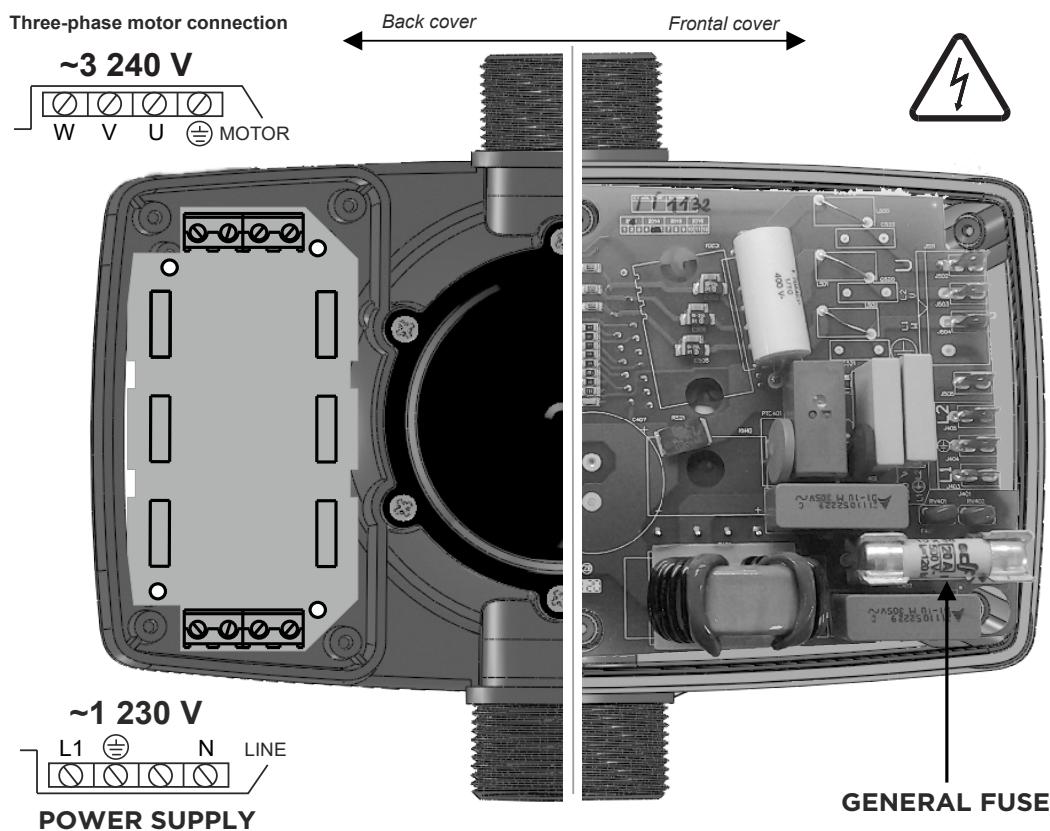
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**MODELS:** VSRE 50-175 | 65-175 | 46-350

**VSC1-12**

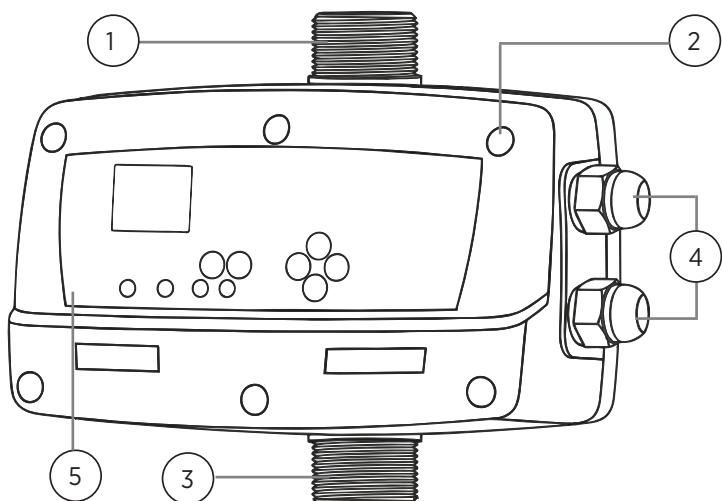
COMPONENTS &

**MATERIALS**



VARIABLE SPEED DRIVE

POSITION	COMPONENT	MATERIAL
1	Outlet - 1" Thread	Polymer
2	Casing -Reinforced	UV Resistant Polymer
3	Inlet, 1" Thread	Polymer
4	Power In-Out Connections	-
5	Display Board	-



# WARRANTY | INSTRUCTION MANUAL

BEFORE INSTALLATION AND USE READ THE FOLLOWING INSTRUCTIONS CAREFULLY. THE MANUFACTURER DECLINES ALL RESPONSABILITY IN THE EVENT OF ACCIDENT OR DAMAGE DUE TO NEGLIGENCE OR FAILURE TO OBSERVE THE INSTRUCTIONS DESCRIBED IN THIS MANUAL OR IN CONDITIONS THAT DIFFER FROM THOSE INDICATED ON THE DEVICE. TECHNICAL MODIFICATIONS RESERVED

## 1. OPERATION.

The REEFE Variable Speed Controller (VSC) is an automatic pump controller designed for the control of single-phase or three-phase pumps (depending on model). The VSC Controller includes an electronic system managed by software which responds to the rigorous requirements of efficiency and safety of pumps. It includes a frequency inverter that regulates the speed of the pump in order to keep the pressure constant independently of the flow provided from the pump. The system incorporates a LCD screen where the parameters configuration is very easy to view. Once the configuration parameters are set and confirmed, the device manages the start-up of the pump and the frequency inverter. It ensures a constant pressure and an important cost reduction because at any time the control will feed the system with the right and necessary output, obtaining a maximum energy efficiency. In order to establish the ideal pressure in the installation is suitable to consider following criteria:

Hm: Max. water column height in m. It depends on the number of floors and it corresponds to the height from the pump to the last floor. Every 10 m of height corresponds approximately to 1 bar (0.98) bar.

Pw: Available minimum pressure in last floor (usually 1.5 bar).

Pc: Pressure drop. An average allowance is 0.033 bar/m (this can depend on the pipework installed).

Prmin: Minimum resultant pressure. It is the sum of the previous pressures and it will be the operating pressure of the pump. Example for a 5 floors building (15 m) with pump placed at level 0:

$Hm = 15 \text{ m} @ 1.5 \text{ bar}$   $Pw = 1.5 \text{ bar}$   $Pc = 15 \times 0.033 \text{ bar} @ 0.5 \text{ bar}$   $Prmin = 1.5 + 1.5 + 0.5 = 3.5 \text{ bar}$

## MASTER AND SLAVE OPERATION

The group MASTER-SLAVE is constituted by a Controller - responsible for the group's control - and a Controller configured as SLAVE controlled by the master device (VSC1-7.5 does not have MASTER-SLAVE compatibility).

Due to the alternating sequence of operation, the VSC Controller configured as MASTER begins the first cycle as the MAIN device - its pump is the first to start - but in the next cycle it becomes SECONDARY - its pump is the second to start - and so on. Therefore, the fact that a device is configured as MASTER involves control of the group but this fact does not avoid its work alternately as SECONDARY device.

## 2. CLASSIFICATION AND TYPE.

According to EN-60730-1 this product is a device of independent assembly, type 1B with software of class A. Control circuit for alternating current motor with power factor  $\cos \geq 0.6$ . Pollution Degree 2. Rated impulse voltage: 2500V/CATII. Class of disconnection 1Y (electronic disconnection).

## 3. MAIN CHARACTERISTICS.

DN inlet port 1" or 1 1/4" BSP male ISO 228.

DN outlet port 1" or 1 1/4" BSP male ISO 228.

Frequency inverter for the pump control.

Control and safety system against over-intensities.

Control and safety system against dry operation.

REEFE Automatic Restart (RAR). If the device has been stopped due to the action of the safety system against over-intensities, the RAR tries to connect the pump, with a programmed periodicity because the water supply could have been restored or still available.

Automatic restore system after an interruption of power supply. System is activated in AUTOMATIC mode keeping the configuration parameters (see "CONFIGURATION" chapter).

Internal pressure transducer.

Control panel (see chapter 7): 2 digits display, pushbuttons, led lights and digital gauge providing instantaneous and heads up display.

Register of operational controls: information about operating hours, counter of starts, counter of connections to the power supply.

Connections for detection of minimum water level in aspiration tank. This system is independent of the safety against dry operation. Is optional.

Register of alarms: information about type and number of alarms since the starting up of the device.

## 4. HYDRAULIC CONNECTIONS (fig. 2 and 3)

Before proceeding with hydraulic connection it is essential to install a non-return valve in the pump's inlet.

The VSC Controller must be connected in vertical position (diag.3), the inlet port directly to the main pump discharge and the outlet port at the main network. It is compulsory to use an pressure tank in order to avoid continuous start-stops due to the deterioration of taps, valves, ... and also to prevent "water hammer" in installations with valves of wide diameter.

## 5. ELECTRIC CONNECTION (fig. 1)

Before doing modifications inside the device, it should be disconnected from the electrical supply and after disabling, wait for 2 minutes in order to avoid electrical discharges (all electrical connections and directions below must be carried out by a licensed electrician).

Use cables type H07RN-F with section enough to the power installed:

Power supply: 1,5 mm<sup>2</sup>(max.2,5 mm<sup>2</sup>).

Motor supply: 1 mm<sup>2</sup> (max.2,5 mm<sup>2</sup>) depending on the cable length (see fig.1).

Verify if the power supply is 220/240 V. Dismount the back cover and carry out the connections according to the indications of fig. 1.

Do the power supply connection (make sure there is a good earth connection): L1 L2 Do the connection by mean of a suitable 3 Pin Approved Power Plug in OFF mode.

The earth conductor must be longer than the others. It will be the first one to be mounted during the assembly and the last one to disconnect during disassembling.

Do the pump connection.

Min. level control (optional). There is an input for stopping the pump as soon as is disconnected the external switch of minimum level. Connection of 2 devices (optional): for the communication of 2 devices it will be used a cable of 4x0.25 mm<sup>2</sup>, it will be inserted throw the PG cable gland located in the bottom/lateral of the device. See Fig.9.

WARNING! Wrong connections could spoil the electronic circuit. The manufacturer declines all responsibility in damages caused by incorrect connection.

## 6.START UP (plug & play).

Be sure that the pump is correctly primed

Connect the VSC Controller to the electric supply with the 3 Pin Power Plug, all the led lights will flash instantaneously for a second. Screen will show SP (set pressure) and then its default value 2,0 bar, both displays are alternated in time periods of 1 and 5 seconds.

By pressing the  $\Delta$   $\nabla$  buttons we can adjust the desired set pressure for the application. Be sure to not set the pressure higher than 85% of the maximum pump pressure, the pump will never turn off if the pressure is set too high. Warranty is VOID if pressure is set too high.

Press the push-button AUTO, the device will start to operate and led light AUTO ON/OFF will turn on. The screen will show the current system pressure. Being in automatic mode and using the push-buttons we can change the following displays:

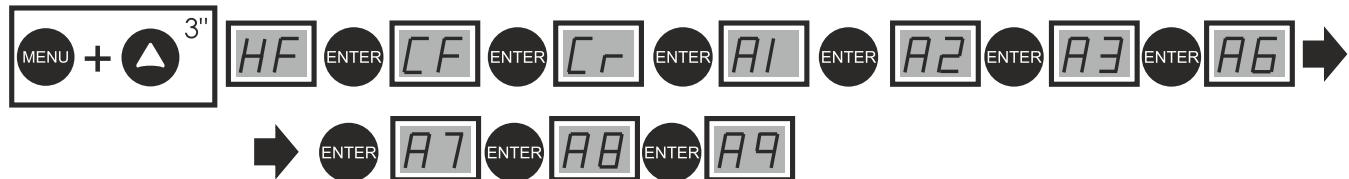
P: Current system pressure (bar).

F: Current Speed speed (Hz).

	1. Press push-button MENU for 3 seconds to start the configuration sequence.	
	2. Input the nominal intensity value in Amps using ▲▼ enabling the thermal protection. For VSC1-7.5 must be within 0 and 7.5 A, the default value is 7.5 A. For VSC1-12 must be within 0 and 12 A, the default value is 12 A. This value is located over the characteristics plate of the motor. Press ENTER for validation.	
	3. Using the START/STOP pushbutton verify the rotation sense. By mean of keys ▲▼ (0/1) we can change it. Press ENTER for validation. (3 Phase Models ONLY)	
	4. Using ▲ this value can be changed to lower/increase the speed of rotation (speed of the pump start up). This can help if there are potential leaks in the line, or long/short runs of pipework. The value must be within 30 and 35 Hz. Default value is 30 Hz. Press push-button ENTER, for validation and quit this menu.	
	5. If the installation does not have level probe press ENTER to validate 0. If the installation has a level probe, use keys ▲▼ to change 0 by 1.	
	6. The device is configured as 0-SINGLE as default value. In case of group assembly (M-S), the Master device has to be configured as 1-MASTER and the Slave as 2-SLAVE. ENTER to validate.	
	7. In case 1-MASTER is selected it can be adjusted a maximum time of continued functioning. After the configured time (t.A) of a continued functioning an alternance will be forced. Value 00 means this parameter is disabled.	
	8. System is ready. By pressing AUTO ON/OFF to quit the manual operating mode.	

## 7. REGISTER OF OPERATION DATA AND ALARMS.

By simultaneously holding down buttons MENU + ▲ for 3 seconds the user can report on the REGISTER OF OPERATION DATA AND ALARMS, by pressing ENTER we can advance through the sequence, once finished the sequence we come back to the main display. This is all the sequence:



- REGISTER HOURS (HF). Counter of total time that the pump has been operating.
- REGISTER STARTS (CF). Number of cycles of operation, a cycle is a start and a stop.
- REGISTER SWITCH (Cr). Number of connections to the electric supply.
- ALARM COUNT DRY RUN (A1). Number of dry-running alarms.
- ALARM COUNT I MAX (A2). Number of overcurrent alarms.
- ALARM COUNT. DISCONNECTED PUMP (A3). Number of disconnected pump alarms.
- ALARM COUNT. TEMP (A6). Number of alarms by excessive temperature.
- ALARM COUNT. SHORTCIRCUIT (A7). Number of short circuit alarms.
- ALARM COUNT. OVERVOLTAGE (A8). Number of overvoltage alarms.
- ALARM COUNT. UNDERVOLTAGE (A9). Number of undervoltage alarms.

All the records are saved even if the device has been disconnected from the electric supply.

Note: For quantities with more than 2 figures they will appear in consecutive screens after each ENTER. For example, to indicate 10234 overcurrent alarms:



## 12. ALARMS

In case of simultaneous alarms, quit the automatic mode and go to manual mode, pressing the pushbutton **AUTOMATIC ON/OFF** (led light PUMP will turn off). Using key ▲▼ will be displayed the successive alarms. Once visualized, for leaving the menu, press ENTER returning to MANUAL mode.

## A1 DRY RUNNING (\*Failure verification •Final failure)

DESCRIPTION: if the system detects dry running during more than 10 seconds, it will stop the pump and the ART (Automatic ResetTest) will be activated.

SYSTEM REACTION: after 5 minutes ART system will start again the pump during 30 seconds, trying to restore the system. In case of persistent lack of water, it will try it again every 30 minutes for 24 hours. If after all these cycles , the system still detects lack of water, pump will remain permanently out of order until the damage will be repaired.

SOLUTION: dry running, it has been activated the safety system: you should verify the feeding of the hydraulic network. The pumps can be primed using the push-button START/STOP ( the led light AUTOMATIC should be off, if it is not, press the push-button to disable it).

**Special case:** if the pump cannot provide the programmed pressure (configuration mistake) the Speedmatic Easy reacts as it was dry-running.

**Special Case 2:** this device manages the dry running control through the nominal current consumption of the pump. It must be verified the introduced current consumption in the setup menu (see paragraph 9).

## A2 OVER-INTENSITY(\*Failure verification •Final failure)

DESCRIPTION: the pump is protected against over currents by mean of the intensity values established in the installation menu. These over currents are produced generally by dysfunctions in the pump or in the electric supply.

SYSTEM REACTION: when detecting the thermal failure, the pump will be automatically stopped. The system will try again to restart the pump when the demand of consumption require it. The control system will carry out 4 attempts in this circumstances. If the system remain locked after the 4th attempt, the pump will remain definitively out of order.

SOLUTION: verify the state of the pump, for example the impeller could be blocked. Verify intensity values introduced in the configuration menu. Once the problem have been solved the operation will be restored going to the "SET UP" menu ( see the chapter configuration) and configuring the adequate intensity values.

## A3 DISCONNECTED P. (•Final failure)

DESCRIPTION: the Speedmatic Easy has an electronic safety system in case of no load detection.

SYSTEM REACTION: the device is disconnected..

SOLUTION: the wound of the motor and the pump consumption should be verified. Once the problem have been solved the operation will be restored going to the "SET UP" menu (see the chapter configuration) and introducing the adequate intensity values. Verify the fuses (see fig.3), in case of being melt contact with technical service.

## A5 TRANSDUCER (•Final failure)

DESCRIPTION: the transducer damages are showed in the Speedmatic Easy's LCD screen.

SYSTEM REACTION: the device operation is interrupted.

SOLUTION: contact with technical service.

## A6 EXCESSIVE TEMP. (•Final failure)

DESCRIPTION: the system has a cooling device to keep the INVERTER in optimum working conditions.

SYSTEM REACTION: if an excessive temperature is reached the own system leaves the inverter out of service and as consequence the pump too.

SOLUTION: verify the temperature of the water, it should be under 40 °C and the temperature environment should be under 50 °C. Contact with technical service.

## A7 SHORTCIRCUIT (•Final failure)

DESCRIPTION: the Speedmatic Easy has an electronic system for protection against short circuits as well as peaks of current.

SYSTEM REACTION: the pump remains stopped for 10". Then it starts again - 4 attempts. If the problem is not solved, the pump will remain definitively out of order.

SOLUTION: check the pump, if the problem persists, contact the technical service.

## A8 OVERVOLTAGE - A9 UNDERVOLTAGE (\*Failure verification)

DESCRIPTION: the Speedmatic Easy has an electronic safety system against overvoltages and too low supply voltages.

SYSTEM REACTION: in case of overvoltage or undervoltage the system remains stopped until an adequate value of voltage is reached. In this case, the system is automatically restored.

SOLUTION: check the electric supply.

DESCRIPTION: blank screen.

SOLUTION: check the electric supply 240V. In case of being in right conditions, the general fuse, located in the main plate (fig 1) should be verified.

## INSTALLATION CHECKLIST: MUST BE FILLED IN FOR WARRANTY TO APPLY

PURCHASER NAME & ADDRESS..... PHONE NO.....

DATE OF PURCHASE ...../...../..... DEALER/STORE NAME.....

DEALER SUBURB/TOWN..... PHONE NO.....

BRAND & MODEL NUMBER OF PUMP..... BATCH or SERIAL NUMBER.....

Do NOT send this form to us, retain it for your record.

## INSTALLATION CHECKLIST: MUST BE FILLED IN FOR WARRANTY TO APPLY

Installer Name\_\_\_\_\_ Qualification:\_\_\_\_\_ (write Owner if applicable)

Phone Number:\_\_\_\_\_ If installed by a Plumber or Electrician, Licence No:\_\_\_\_\_

Installation Address:\_\_\_\_\_

### **Tick the boxes as the item is completed/correct, put n/a if not applicable;**

- The Pump that the Pump Controller is fitted to is no larger than 1.5kW / 8Amp and has a 240V motor.
- The Pump & Pump Controller are being used for an appropriate purpose for which it is intended, according to the instructions
- The Power Circuit the Pump & Pump Controller is connected to is RCD (Safety Switch) Protected
- The Pump Controller is installed upright, as per Figure 1, page 1
- A Y-Strainer or Pre-filter is installed in the suction pipe to prevent particles entering the Pump & Pump Controller, or for submersible pumps, between the pump and the controller.
- Barrel Unions are fitted on the pipe connections for easy removal & replacement
- A Ball Valve or Gate Valve is fitted to the suction pipe (the pipe from tank to pump)
- Pipe is sized appropriately for the application (diameter and length)
- The installation is constructed so the Pump & Pump Controller can be easily removed or replaced.
- If applicable: The Pump & Pump Controller is installed in accordance with National & Local Plumbing Regulations
- The Electrical Supply cable is plugged into a Power Outlet that is in accordance with the current standard of Electrical Safety Regulations AS/NZS 3000 - or the Pump & Pump Controller has been wired directly to the power circuit by a Licensed Electrician.
- The Pump has been primed (filled with water) started, tested, and operates correctly.
- The suction & discharge pipes, connections, barrel-unions, and toilet cisterns (if connected) have all been checked for leaks.
- The Pump & Pump Controller is protected from sunlight & rain, with a suitable vented pump-cover or enclosure.
- If applicable: The Owner has been shown how to re-prime and re-set the pump (re-fill the pump with water if it runs dry)

Signed by the Installer:\_\_\_\_\_

Date Installed: / /

## **12 MONTH WARRANTY CONDITIONS**

1. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. If you are a consumer as defined by the Australian Consumer Law, you are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. The following conditions form part of the instructions and do not over-ride your statutory rights.
2. This warranty against defects covers failure due to manufacturing defects within a 12 month period from the date of original purchase, for Pump Controllers purchased from Ascento and used in mainland Australia. In the case of a failure covered by warranty within a 12 month period from the date of original purchase, the Pump Controller will be repaired or replaced - or you can return it to the place of purchase for a refund.
3. Faults or losses or failure caused due to: Accidents, misuse, lack of maintenance, not following these instructions, damage caused by lightning strike/power surges/spikes/brownouts/operating the Pump Controller on power other than 240volts 50Hz mains power/operating the pump on power supplied by a domestic generator - are not covered by warranty.
4. The warranty only covers the Pump Controller, it does not include the Pump that it is connected to, refer to the supplier of that pump.
5. Warranty will be void if any tampering or removal of identification labels or electrical cables has occurred, or any non-genuine parts have been fitted, or repairs have been carried out by unqualified persons. No warranty applies for goods sold or used for HIRE or RENT or LEASE. No warranty applies, and no liability is accepted, if the pump controller is used in circumstances that we define as: HAZARDOUS SITUATIONS, MINE SITE, REMOTE AREA, INDUSTRIAL APPLICATION, or any other UNSUITABLE APPLICATION, all of these circumstances are defined by us at our sole discretion.
6. If an exact replacement is not available, the closest equivalent product will be supplied at our discretion.
7. This product is guaranteed as fit for the purpose of starting & stopping suitable sized pumps that are used for CLEAN FRESH WATER and for NO OTHER USE. Performance data quoted is generally from test data and does not take into account factors in the installation such as loss of pressure and flow due to pipework & pipe-fittings & valves.
8. **IMPORTANT:** No electrical appliances last forever. Therefore ALL installations must be constructed to allow the owner to easily remove the Pump Controller for servicing, and to easily remove for replacement, warranty replacement or upgrading. The installation must NOT be constructed in such a manner that specialized tools, or paid tradespersons, or external paid contractors, are required to be engaged in order to remove and/or replace and/or refit the Pump Controller. Warranty replacement does not normally include costs of removal and re-installation as we have no control over the method of installation.
9. Before installing or servicing disconnect from the power supply. All pumps & Pump Controller must be installed using barrel-union connections to facilitate easy servicing or replacement. A ball-valve or gate-valve must be fitted on the suction, and the Town-water backup supply where fitted. Additionally a Y-Strainer or Pre-filter must be installed on the suction to prevent particles entering the pump. This instruction is a condition of warranty; all warranty is void if this instruction is not followed.
10. This Pump Controller is not to be used as your sole water supply. For critical applications where loss of water supply could cause serious consequences, use a DUAL PUMP System so you have a backup water supply or use a TOWN-WATER BACK-UP System.
11. This Pump Controller MUST NOT be installed in any manner that if it were to leak that it would cause damage or loss to property or persons. It MUST be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition.
12. The Pump & Pump Controller must be connected to a suitable circuit with an integral RCD (safety switch) in the circuit breaker. All warranty is void if this instruction is not followed.
13. In the case of a fault, refer to the Trouble Shooting Guide first. If these steps do not rectify the problem, then return the faulty appliance to the original place of purchase with proof of purchase, and the installation checklist above, for replacement or refund. Alternatively you can mail us at PO BOX 650 MORNINGSIDE QLD 4170 or send an email to [sales@ascento.com.au](mailto:sales@ascento.com.au) with copy of your purchase receipt, and the installation checklist above, a description of the problem, and your name and address and phone number - we will review your request and send you a replacement directly if we accept your warranty claim. Or call us on 1800807604 with the above information; however we will always require a copy of your purchase receipt and the installation checklist above. Do not send the product to us unless we ask you to do so.
14. This warranty does not exclude any non-excludable rights according to Australian Law. However any condition that is made void by Australian Law does not void the remaining conditions, which shall stand unaltered.

## **PRIVACY STATEMENT**

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# INSTRUCTION MANUAL & WARRANTY EXTERNAL PRESSURE PUMPS

**APPLICATION:** CONSTANT PRESSURE PUMPS are fit for purpose when installed correctly according to these instructions; For pumping of Clean Fresh Water at a temperature of +5°C to +40°C to: Garden Taps, Houses, Sheds, Cabins, Pressure Boosting, Clean Water Transfer, suitable Rain-to-Mains Systems (370Watt and greater motor size) and for no other use. They must not be used in hazardous locations or for liquids other than clean water, or for continuous operation.

**DANGER: DO NOT INSTALL ANY PUMP if the premises does not have a Safety Switch (RCD)**

**IMPORTANT:** Ensure the pump is the right size for your application, before you install it. A pump that is under-sized is not faulty, and is not covered by warranty. Ensure the right size piping is used, small pipes reduce performance and cause the pump to use more power! See below for further information, and refer to the information on the box and/or label on the pump for the performance data. If in doubt consult with your dealer or a pump technician to ensure your pump is sized to suit your needs.

## PERFORMANCE DATA

**Refer to the information on the box.**

NOTES: Performance data quoted is generally from test data, and can vary, and does not take into account factors in the installation such as loss of pressure and flow due to pipework & pipe-fittings & valves. Product depicted on the box and referred to in this document, and other diagrammatic instructions, may differ from the product supplied, due to design changes or improvements.

\*\*\*Be aware that the Amps and Wattage will vary according to the load on the motor, the figures stated are approximate.

## INSTALLATION GUIDELINES

Please read and follow the instructions including the diagrammatic instructions. Warranty is voided if the instructions are not followed.

**1a. IMPORTANT MANDATORY REQUIREMENTS FOR ALL INSTALLATIONS:** Before installing or servicing disconnect from the power supply. All pumps must be installed using barrel-union connections to facilitate easy servicing or replacement. Ball-valves or gate-valves must be fitted on the suction, and the discharge, and the Town-water backup supply where fitted. A Y-Strainer or Pre-filter must be installed on the suction to prevent particles entering the pump. Remove all swarf from the tank after cutting openings etc – swarf in the pump voids warranty. All instructions are conditions of warranty; all warranty is void if instructions are not followed.

It is recommended to install a Check-Valve in the discharge pipework, however DO NOT install the check valve directly on the discharge of the Pressure Controller, as this may cause it to malfunction, install the Check-Valve further down the pipe, before the first point of discharge.

**1b. IRRIGATION USE - MANDATORY REQUIREMENTS FOR ALL INSTALLATIONS:** For any installation of these pumps that is supplying irrigation, you must fit an 18L or larger pressure tank. Air pressure must be set at 70% of maximum pump pressure. Tank is simply fitted to the discharge pipework with a “tee”, anywhere between the pump and the first point of discharge.

**2. POSITION** Do not position the pump where it could take in solids or sludge. This pump is not to be used as your sole water supply. For critical applications where loss of water supply could cause serious consequences, use a DUAL PUMP System so you have a second water supply or use a TOWN-WATER BACK-UP SYSTEM. This pump is not designed for Fire Fighting purposes.

**3. PROTECT FROM THE WEATHER:** The pump must be protected from the weather, by way of a plastic pump cover or skillion roof cover, or similar. However the installer must ensure that there is adequate ventilation so the pump does not overheat.

**4. IMPORTANT re INSTALLATION:** This pump MUST NOT be installed in any manner that if it were to leak that it would cause damage or loss to property or persons. It MUST be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition. If the pump leaks, the water must be able to drain away from the pump and not cause damage.

**DANGER!** If water pools around the pump (from any source of water) it will cause a dangerous electrical hazard.

**5. BASE must be LEVEL** Fix the pump in place through the footplate using suitable fasteners, on a stable, level surface – the base must NOT be sloping even slightly – ensure it is level.

**6. IMPORTANT NOTE re PUMP NOISE:** Avoid installing pumps near bedrooms or neighbours bedrooms. Particularly JET pumps, due to their self-priming design they typically make more noise than a MULTISTAGE Pump. This is a feature of the pump design, it is not a fault, and is not a cause for warranty claims, as it is not a product fault. If noise is likely to cause problems, we recommend that you use a MULTISTAGE Pump, and install the pump AWAY from bedrooms.

**7. (a) PIPE SIZE AND TYPE:** Install the pump as near the water supply as possible to reduce the length of suction pipe. We recommend heavy duty flexible suction hose for the inlet (Suction Pipe) but whatever pipe is used it must be no less than the same Internal Diameter as the PUMP INLET (1 size bigger is better), and heavy-duty pressure hose or similar for the outlet, we recommend the Internal Diameter for the delivery pipework is the same as the PUMP OUTLET for the best performance, or no more than one size less than the Pump Outlet Internal Diameter. If the pump is for “Whole of house” supply (check is your pump big enough first!!) we strongly recommend that 25mm Internal Diameter piping is used throughout the house, and is only reduced to connect to the fixtures as required, this will ensure that the pump delivers best performance and efficiency, saving the user money over the long-term. Use as few bends as possible, every bend reduces performance.

**IMPORTANT!** If your house has more than 3 bathrooms you MUST consult with a Pump Specialist to ensure you size your Pump and Pipework correctly – remember that a short term saving could become a long-term liability.

**7. (b) MORE INFO RE PIPE SIZE:** Pressure of the water at the discharge (taps, showers, irrigation etc) is affected by the pipe size. The SMALLER your pipes, the LOWER the pressure will be at discharge. Example: 13mm ID pipe over 20 metres at 30Lpm will reduce pressure at discharge by 240kPa (2.4bar) - whereas if 25mm ID pipe is used for 20 meters at 30Lpm it only reduces pressure by a minuscule 10kPa. Smaller pipe also means that more power will be used as the pump has to work harder to overcome the extra back-pressure from small pipes. A small short-term saving (in the cost of the pipes) will become a long-term liability.

**8. SEAL JOINTS** Ensure all fittings and joints are watertight and airtight, especially in suction-lift applications.

**9. INSTALLATION AND ELECTRICAL WIRING** must adhere to state and local codes and must be completed before priming the pump. These pumps come with an earthed power plug and all electrical installations must be earthed. Any Electrical work must be performed by a licenced Electrician. The installation must also comply with applicable Plumbing Regulations, it is the installers responsibility to ensure compliance.

## **10. IMPORTANT re SAFETY SWITCH (RCD):**

(a) The Pump must be connected to a suitable power circuit protected by a RCD (safety switch) having a rated residual operating current not exceeding 30mA, in the circuit breaker. (3-Phase 415 Volt Pumps must be installed by a licenced Electrician according to applicable Regulations & Australian Standards) Disconnect the pump from power supply when people are in the water, or when servicing or repairing the pump. All warranty is void if this instruction is not followed. Plugging into existing outlets may cause low voltage supply to the motor, which may trip motor overload, or burn out the motor, which will not be covered by the Warranty.  
(b) Surge Protection - We recommend that a surge protector is used to protect the electronics of this pump, as damage due to power surges is not covered by the Warranty.

## **11. MAINS PRESSURE BOOSTING** This is a specialized type of application, and must be completed by a Qualified Plumber or Pump Technician who is competent and licenced to perform this type of installation.

**12. VOLTAGE** of power supply must match the voltage of the pump – 240V AC only for Single-Phase pumps, 415V for 3-Phase pumps, refer to the nameplate of the pump for correct voltage. Do not run on generator power from low quality/old generators. If you only have generator power, you may need to have the Pressure Controller removed and replaced with a Pressure Tank and Switch, at additional cost. The Pressure Controller will be damaged by the voltage fluctuations caused by power supplied by low quality generators. High quality “Sine-Wave” generators are usually acceptable but we cannot guarantee this, as we have no control over the generator that you use, it is your responsibility to ensure the generator used is fit for the purpose.

**13. WARNING:** these pumps are not designed for, and must not be installed in locations classified as hazardous.

## **14. THE FOLLOWING MAY CAUSE SEVERE DAMAGE TO THE PUMP AND WILL VOID WARRANTY:**

- (a) Using an extension cord to power the pump.
- (b) Cutting the earth pin off the plug or using an adapter fitting or double adapter.
- (c) Working on the pump while connected to the power supply.
- (d) Removing motor housing, or disassembling the pump housing, except by a qualified technician
- (e) Pumping chemicals or corrosive liquids or flammable liquids.
- (f) Pumping hot liquids (Exceeding 40° Centigrade)
- (g) Using a generator for power supply - see 12
- (h) Operations that involve frequent starting. This will lead to premature failure of the capacitor. We recommend that if the pump is regularly starting more often than 10 times per hour, you should add a 18L or larger pressure tank into the system. Occasional frequent starting (for example during the evening showers) is not a problem, but constant (most of the day) frequent starting is a problem. Note that if the pump starts and stops more than 7 times within 2 minutes, it may switch itself off and you will need to press the restart button to reactivate it.

## **15. PUMP PRIMING AND START UP**

- (a) Dry operation will destroy the pump seals and is not covered by warranty.
- (b) Remove the pressure controller by loosening the barrel union, (or use the priming plug at the front of the wet-end, near the inlet, but that is slower) and completely fill the pump chamber with water before starting.
- (c) Turn the pump on, if water does not flow, turn it off and repeat step 15(b) again, and if it is suction-lift the entire suction pipe may need to be pre-primed.
- (d) If it still does not pump water, check the intake and discharge pipework is free from airlocks, or any other obstructions and refer to the TROUBLESHOOTING guide.

## **16. SUCTION LIFT**

Suction lift installations are notoriously troublesome, and almost invariably it is not the pump that causes the problem, we recommend using a submersible pump system if at all possible.

**WARNING!** Multistage pumps are not recommended to be used in suction lift applications. Contact REEFE Pumps technicians on 1800 807 604 if you have any questions in relation to suction lift installation.

## **17. OVERLOAD PROTECTION**

This pump has a built in thermal protection switch. The pump stops if a high-temperature condition occurs. The motor restarts automatically after it has cooled down when the built in thermal protector resets itself. Or you may need to turn the power off and on again to reset it. If this problem reoccurs - check as per 15

## **18. IMPORTANT NOTES**

(a) Do not switch the pump on and off frequently, as this will cause damage to the electronics and void warranty. (b) Do not attempt to adjust the flow via the intake pipework (c) If there is insufficient water, the motor will stop. See 15 (f) and also 19. (d) If the pump is idle for a long period of time or in very low temperature, the water should be drained to avoid damage to the pump and/or stagnation of water.

### **DANGER!**

Keep the pump equipment protected from interference by pets, wildlife, children, infirm persons or incompetent persons.

### **WARNING!**

This pump is designed for clean fresh water only, in non-hazardous locations. It must NOT be used as a continuous duty fountain pump, or dirty water, or liquids other than water. Install in well ventilated and well drained area.

## **19. PUMP CONTROLLER FUNCTION AND OPERATION:**

The Pump Controller (sometimes referred to as the Pressure Controller) fitted to this pump is designed to be almost completely automatic, and will restart itself if the pump runs out of water; you should not normally need to do anything. Instructions and basic function;

- a) Use for CLEAN rainwater only – you must fit a prefilter or Y-Strainer to the intake (suction pipe) of the pump
- b) Do not use a low quality generator for power supply - see section 12 - as this may damage the electronics
- c) Protect from direct sunlight to avoid UV damage to the plastic
- d) The pump controller will stop the pump if there is no water in the pump
- e) It then immediately rechecks for water (Starts pump) for a 15 second trial. Then rechecks again at the 3 minute mark, 1 hour mark, 5 hour mark and then every 24 hours after until the pump reprimers.
- f) When the pump is connected to a rain water tank, once the tank refills with water, the pump automatically reprimers and starts to supply.
- g) If it happens to do this in the middle of the night it can be annoying! In the morning, turn it off & on again after 30 seconds and it will reset itself so it does the checking in daylight hours.
- h) Leak detection function: if the pump starts and stops 7 times or more in about 2 minutes, the pump may turn off automatically. If this occurs, investigate what is leaking.

- i) You can reset the function back to the beginning anytime by pressing the restart button.
- j) If it is many days before it rains again (or you have your tank re-filled), turn off the power to the pump, at the power outlet
- k) Occasionally when the pump re-starts after a run-dry event, some air might come through the lines, this will do no harm.
- l) NOTE: if pipe from tank to pump is not straight it will most likely get air-locks in the pipe, and the pump might not shut down properly when the tank is low, as it is getting some air, some water - this is not a fault - simply turn the pump off until the tank fills to have 500mm depth or more.

## **TROUBLESHOOTING CHECKLIST**

Check the following before requesting service or repair. A call out fee and labour cost may apply to field services.

### **PROBLEMS & POSSIBLE CAUSES:**

#### **20. Light Flashes "No Water" or "Failure"**

- 1. This normally indicates that the pump has no water, either because the tank is empty or the pump has "lost prime" it has run dry.
- 2. The pump is fitted with an AUTOMATIC RESTART controller so it will attempt to re-start itself several times. This is normal, it does not mean the pump is faulty. Refer to point 19 a) to k) of the instructions.

**NOTICE:** tank level indicators are not always accurate!! Check inside the tank to be sure of the water level.

#### **21. Pump does not run or motor runs for a short time, then stops**

- 1. Circuit breaker or Safety Switch is off or fuse has blown > in a SAFE manner investigate why this has occurred, by process of elimination > do not assume it is the pump > if you cannot do this safely, have a licenced Electrician check and rectify it.
- 2. Water level in the tank is too low > Top up or use alternative supply > turn pump off until the tank fills
- 3. Electrical components have been flooded > It is likely that the pump will need to be replaced > in a SAFE manner investigate why this has occurred, by process of elimination > do not assume it is the pump > if you cannot do this safely, have a licenced Electrician check and rectify it.
- 4. Pump plug is not connected properly, or has been flooded or wet > Isolate power at main switch, remove plug & allow to dry. If the problem continues, contact a licenced electrician to check the cause.
- 5. If all of the above are OK, the pump might have overheated and triggered the thermal overload switch > Turn it off and wait 30 minutes for it to cool down and turn it on again > If the pump does not operate normally, investigate why, it might be blocked with debris, or the Y-Strainer/Prefilter might be blocked > flush clean and re-assemble.

#### **22. Pump runs but does not deliver water or only a small amount of water**

- 1. Check valve is installed backwards, arrow on valve should point in direction of flow > have the installer fix this.
- 2. Discharge shut-off valve/ball-valve / gate-valve may be closed > open the valve.
- 3. Impeller or volute openings are fully or partially clogged or it might be blocked with debris, or the Y-Strainer/Prefilter might be blocked > flush clean and re-assemble > if it is the pump, disconnect from the power supply, and if you are competent to do so, disassemble the pump and clean. If not, have a pump technician do it for you.
- 4. Pump is air-locked > Start and stop several times by turning it on and off with 20 seconds between. If this does not work, see below regarding re-priming the pump
- 5. Vertical pumping distance is too high - Reduce distance or upgrade to a larger pump.
- 6. Foot valve blocked > Clean or replace the FOOT valve
- 7. Tank too low water level > Check the suction and water levels

#### **23. Pump runs and does not stop or runs when no taps are in use**

- 1. In most cases this situation it is due to a leak in pipework or leaking toilet cisterns or underground pipe leak (wet soil, muddy, grass growing well!) > it is not a pump fault > ascertain by process of elimination what is leaking > the only sure way to check toilet cisterns is to turn them off at the stopcock which is usually under the cistern as most of them will not run into the pan > close the ballvalve / gate-valve on the discharge side of the pump, does the pump now stop > something is leaking it is not a pump fault.
- 2. There could be debris inside the Pump Controller > open all taps fully to try and flush it out > if this does not work disconnect from the power supply and [a] remove the pipework off the top of the controller there is probably some debris in the brass "popit valve" that is in the top of the controller, carefully remove the debris > if it is not that disassemble the pump controller and clean, or have a pump technician do it for you.

#### **24. Pump not pumping properly**

- 1. Too high head or pump under specified > Check specifications.
- 2. Too low water level > Check the water level in the tank, tank level indicators are not always accurate
- 3. Loss of prime > Check foot valve (if fitted), re-prime the pump.
- 4. Leakage of inlet pipe > Check the inlet pipe is not taking in air, check all joints.
- 5. Inlet Pipe has rise and fall (Dips) or has too many elbows or is blocked > Fix suction pipe so it is both perfectly straight and level, OR rises all the way to the pump, or turn the pump off and wait for the tank to fill more > NOTE: if the inlet pipe is not straight to the pump it is most likely that you WILL get airlocks in the pipework especially when the tank has low water, this is NOT a pump fault > turn the pump off until the tank fills to have 500mm depth or more.
- 6. If a check valve has been installed directly on the discharge of the pump controller, this may cause the pump controller to malfunction > Move the check valve to a different position.

#### **25. Safety Switch (RCD) or Circuit Breaker trips when the pump starts**

- 1. Circuit is overloaded with too many appliances connected to it > contact a licenced electrician to install additional circuit
- 2. Power plug is wet > refer 21.
- 3. Pump has been flooded > refer 21.3
- 4. If none of the above, the Motor may be defective > have it checked by a qualified technician

If you have checked all the above trouble shooting points and it fails to rectify the problem, have it checked by a qualified technician

## **WARNING!**

### **ELECTRICAL PRECAUTIONS**

**DO NOT INSTALL PUMP if the premises does not have a Safety Switch (RCD)**

Before servicing a pump, always shut off the power supply and then make sure you are not standing in water and that there is no risk of electrical shock. If pump is direct-wired to the electrical circuit, have a qualified licensed electrician disconnect it before attempting any repairs or servicing.

**DO NOT ATTEMPT ELECTRICAL REPAIRS OF ANY SORT UNLESS YOU ARE A LICENSED ELECTRICIAN**

### **WARRANTY RECORD - FILL IN AND RETAIN THIS WITH YOUR ORIGINAL PURCHASE RECEIPT**

PURCHASER NAME & ADDRESS..... PHONE NO.....

DATE OF PURCHASE ...../...../..... DEALER/STORE NAME.....

DEALER SUBURB/TOWN..... PHONE NO.....

BRAND & MODEL NUMBER OF PUMP..... BATCH or SERIAL NUMBER.....

Do NOT send this form to us, retain it for your record.

### **INSTALLATION CHECKLIST: MUST BE FILLED IN FOR WARRANTY TO APPLY**

Installer Name\_\_\_\_\_ Qualification:\_\_\_\_\_ (write Owner if applicable)

Phone Number: \_\_\_\_\_ If installed by a Plumber or Electrician, Licence No:\_\_\_\_\_

Installation Address:\_\_\_\_\_

Tick the boxes as the item is completed/correct, put n/a if not applicable;

- ] The Pump is being used for an appropriate purpose for which it is intended, according to the instructions
- ] The Power Circuit the Pump is connected to is RCD (Safety Switch) Protected
- ] A Y-Strainer or Pre-filter is installed in the suction pipe to prevent particles entering the pump
- ] All swarf has been removed from the tank after cutting openings etc.
- ] Barrel Unions are fitted on the pipe connections for easy removal & replacement
- ] A Ball Valve or Gate Valve is fitted to the suction pipe (the pipe from tank to pump)
- ] Pipe is sized appropriately for the application (diameter and length)
- ] The installation is constructed so the pump can be easily removed or replaced.
- ] The pump is installed in accordance with National & Local Plumbing Regulations
- ] The Electrical Supply cable is plugged into a Power Outlet that is in accordance with the current standard of Electrical Safety Regulations AS/NZS 3000 – or the pump has been wired directly to the power circuit by a Licenced Electrician.
- ] The Pump has been primed (filled with water) started, tested, and operates correctly.
- ] The pipes and connections and the barrel-union on the pump, and toilet cisterns (if connected) have been checked for leaks.
- ] The pump is protected from sunlight & rain, with a suitable vented pump-cover or enclosure.
- ] The Owner has been shown how to re-prime and re-set the pump (re-fill the pump with water if it runs dry)

Signed by the Installer:\_\_\_\_\_ Date Installed: / /