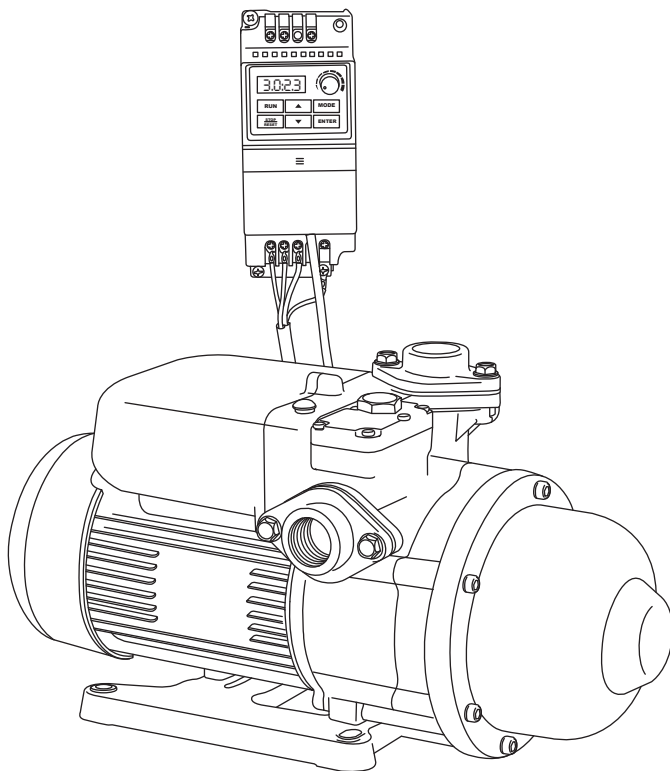


# **WALRUS**

## ***TQI Series***

## ***Constant Pressure System***

## ***Instruction Manual***



**ISO 9001 Certified**

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**Walrus America Inc**

Please read all instructions carefully before installing your new system. The system has been designed and manufactured to give trouble free, reliable operation.

Upon receiving, please check the following:

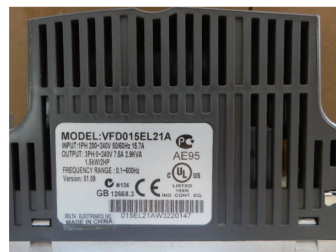
1. The TQI series comes in 2 separate packages, namely :

- The AC Motor Drive (Inverter, or Variable Frequency Drive), as designated 1 of 2 on the box.
- The pump, as designated 2 of 2 on the box.



2. Check the input power specification as listed on the nameplate of the AC Motor Drive to make sure it conforms with the user's application (either 1Ø 115V or 1Ø 230V)

**Caution : Failure to do so might result in personal injury and equipment damage.**



## I. Product

The TQI Constant Pressure System consists of a pump and inverter that is designed for residential and commercial customers who need to boost their water pressure when water demand is high.

## II. Operating conditions:

1. Ambient temp. : Max. +104°F (40°C)
2. Liquid temp. : +39°F(4°C) ~ +104°F(40°C)Max.
3. Pressure sensor : 4-20 mA 2-wire output signal
4. Relative humidity: Max. 85%(RH) and non-condensing environment.
5. Pumped liquids : It is suitable for pumping clean, thin and non-aggressive liquids.

## III. Installation

1. The pump foundation should be rigid enough to absorb any vibration from the motor, and the pump should be securely bolted to the foundation.
2. It is recommended that the plumber/installer provides an adequate draining system to avoid damage in case of leakage, particularly when installed indoors. When it is installed outside, it should be covered by a weather-proof housing, well ventilated to allow motor heat to escape.
3. Connect the suction pipe to the side and discharge pipe on the top.  
( See Fig 1 )
4. When it is installed with water heater, a check valve should be installed between pump (discharge) pipeline and water heater (suction) to avoid high-pressure steam backflow.
5. It is required to shut off the pump when the liquid source is unavailable; although it has the dry run cut off function.

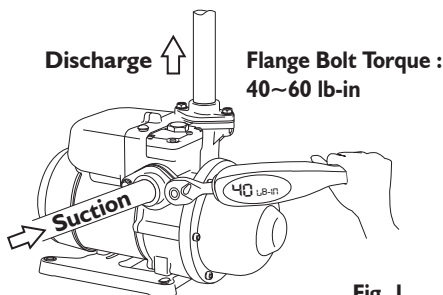


Fig. 1

6. For TQI 1500/2200, please cut out the center of the rubber gasket inside the inlet and outlet flanges as it will block the water flow.  
( See Fig 2 )

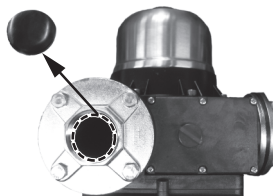


Fig. 2

7. Regular maintenance requires to open the prime cover in order to access the check valve. DO NOT apply any bonded material (such as silicon, glue etc) to seal the chamber cover ( See Fig 3).

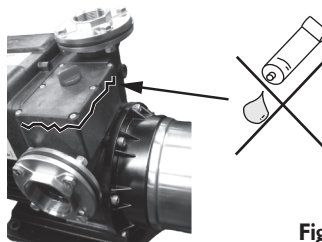


Fig. 3

8. Mount the AC Motor Drive in a location with good ventilation as described in the “Delta” Instruction Sheet.

#### ■ Minimum Mounting Clearances

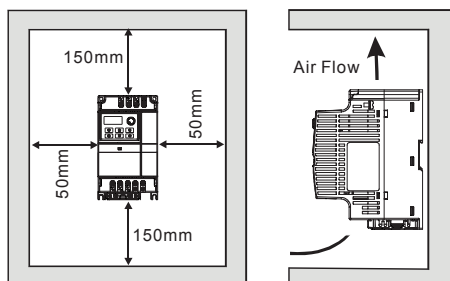


Fig. 4

## IV. Piping

1. The suction line should be installed as short and straight as possible, with a minimum of bends. The internal diameter of the suction pipe must be equal to, or greater than the ports of the pump.
2. The connection between the suction line and pump must be airtight, and the suction pipe must be positioned so it has an upward slope to the pump (thus avoiding the formation of air pockets).
3. If it is likely the water supply may contain solid particles, such as leaves and sand, a filter should be installed on the suction line.
4. If hose is used as the suction pipe, it must be non-collapsible.
5. To minimize pressure drop, the discharge pipe should be at least the same size as the discharge port of the pump.
6. For long suction pipes or high suction lifts over 13 ft, the suction pipe should be of greater diameter than the suction port.
7. Ensure all connections are completely sealed using thread tape only.

## V. Electrical connection



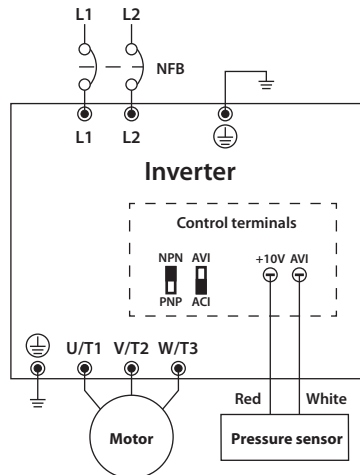
### I. Wiring diagram

#### WARNING:

Risk of electric shock - This pump has not been investigated for use in swimming pool or marine areas.

To reduce the risk of electric shock, connect only to a properly grounded, grounding-type receptacle.

Before operation, please ensure the voltage is correct and the circuit breaker and grounding connectors are all connected in accordance with local regulations.



For your safety, be sure the GFCI (Ground Fault Circuit Interrupter) is in your system and grounding is properly connected to prevent from electric shock.

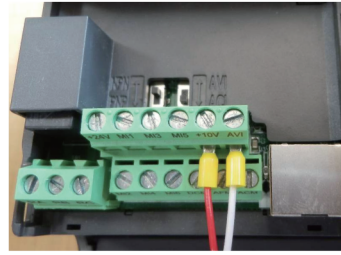
When using a regular GFCI (Ground Fault Circuit Interrupter), please select a current sensor with sensitivity of 200mA, and not less than 0.1-second detection time to avoid nuisance tripping. When using a designated GFCI for AC motor drive, please select a current sensor with sensitivity of 30mA or above.

### 2. Remove the cover by pressing and sliding down.



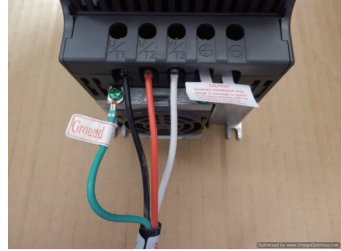
### 3. Wiring connection – Pressure Sensor

Connect the “Red wire” to the “+10V” terminal, and the “White wire” to the “AVI” terminal.  
Check also that the dip switches are set at the “NPN” and “ACI” position.



### 4. Wiring connection – Pump Motor

Connect the pump motor power cables “Black”, “Red”, “White”, and “Green” to the “U”, “V”, “W”, and “Ground” terminals.



### 5. Wiring connection – Input Power

Connect the IØ input power cables to the “L1”, “L2”, and the “Ground” terminals. (cables not included)



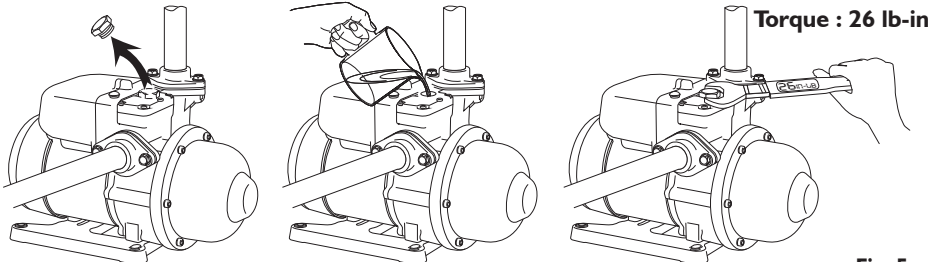
## VI. Starting

1. Before starting, the pump must be primed. For installation with no inlet pressure, please follow the procedure as shown in Fig 5.

**a. Remove the filling plug**

**b. Fill water in chamber**

**c. Replace the filling plug**



**Fig. 5**

2. For installation with inlet pressure, remove the priming plug and allow the water to flow into the priming chamber until all air is expelled.

- Turn on the Input power, the display should show “3.0:0.0”, “ Frd”, “ 3.0”, “H 0.0”, “A 0.0”, in sequence every time the “MODE” key is pressed once.

“3.0:0.0” – displays the preset and actual pressure in kgf/cm<sup>2</sup>. Default preset = 3.0 kgf/cm<sup>2</sup> (43 psi).

“ Frd” – displays the rotation direction.

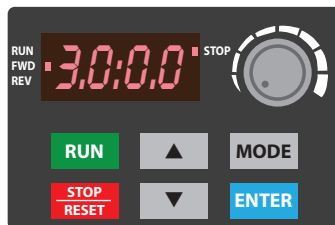
“ 3.0” – with the right digit flashing, this is the mode where the user can adjust the preset constant pressure by the “Up” and “Down” keys.

“H 0.0” – displays the output frequency to the motor.

“A 0.0” – displays the output current.

**Caution :**

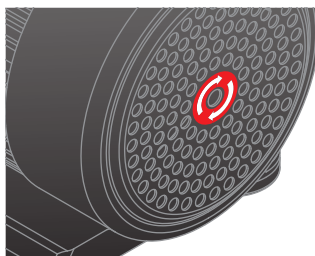
The “ENTER” key is for parameters programming only. Do not manipulate with this key unless you are familiar with the programming procedures.



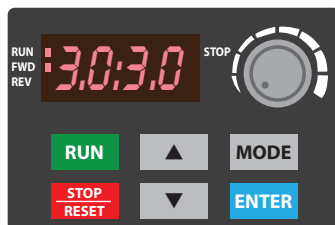
- Press RUN to start the pump.
- Make sure the motor runs the same direction as the rotating direction sticker (on the motor fan cover).

**Caution :**

To correct the rotating direction, just swap any 2 of the 3 motor power cable connections (black, red, and white)



- Slowly open the discharge valve until it is fully open.
- If there is no discharge flow after a few minutes, press the “STOP” key to stop the pump and repeat the Process of 5.1 Turn the pump on and off several times until it is working normally.
- The pump will start and stop automatically in accordance with the water demand. And the actual pressure will be kept constant at the preset value when water consumption is reduced.



## VII. Adjustment of Preset Pressure

- Press “MODE” to scroll the display to “ 3.0” (with the right digit flashing)



2. Press the “▲ Up” or the “▼ Down” key to change the value to the desired value, e.g. 3.5 kgf/cm<sup>2</sup>.

Conversion : 1.0 kgf/cm<sup>2</sup> = 14.2 psi

3.0 kgf/cm<sup>2</sup> = 43 psi

3.5 kgf/cm<sup>2</sup> = 50 psi

3.9 kgf/cm<sup>2</sup> = 55 psi

4.2 kgf/cm<sup>2</sup> = 60 psi

4.6 kgf/cm<sup>2</sup> = 65 psi

4.9 kgf/cm<sup>2</sup> = 70 psi



3. Press the “MODE” key to scroll the display back to the “preset:actual” screen.

**Caution :** The preset pressure value can only be adjusted to a value above 3.0 kgf/cm<sup>2</sup> provided the incoming water source pressure is positive. (e.g. from city main), otherwise, pump will not perform properly.



## VIII. Trouble Shooting

### 1. For pump and motor:

(Before proceeding any action, please switch off the power.)

| Cause                                          | Remedy                                                                                                                                                                              |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor does not run.                            | a. Check if voltage is correct.<br>b. Check if water supply is adequate.<br>c. Check if rotor spins freely.<br>d. If the problem is unsolved, please contact our distributor or us. |
| Motor keeps running when no water is consumed. | a. Check if faucet is completely shut off.<br>b. Check if there is any leak in the system.<br>c. Check if check valve function normally.<br>d. Check if water supply is adequate.   |

### 2. For Inverter controller:

| Cause                        | Remedy                                                                                                                                     |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| ■ Over Current (OC)          | ■ Check if there is any short circuits and grounding between the U, V, W and motor<br>■ Stop power supply, turn the fan and check the load |
| ■ Over Voltage (OV)          | ■ Check if supply voltage is within $\pm 10\%$                                                                                             |
| ■ Low Voltage (Lv)           | ■ Check if supply voltage is within $\pm 10\%$                                                                                             |
| ■ Over Heat (OHI)            | ■ Check if cooling fan is jammed<br>■ Check if surrounding temperature                                                                     |
| ■ Overload (oL)              | ■ Stop power supply, turn the fan and check the load                                                                                       |
| ■ Keypad Display is Abnormal | ■ Cut off the power supply, Re-supply power                                                                                                |
| ■ Phase Loss (PHL)           | ■ Check if the input voltage of R, S, T is unbalanced                                                                                      |
| ■ Ground Fault (GFF)         | ■ Check motor for wet or Water-soak                                                                                                        |

## Limited Warranty

Products manufactured by Walrus Pumps Co (Walrus) are warranted to the first user only to be free of defects in material and workmanship for a period of 12 months from date of installation, but no more than 24 months from date of shipment. Walrus' liability under this warranty shall be limited to repairing or replacing at our election, without charge, FOB Walrus' distribution center or authorized service agent. Walrus will not be liable for any cost of removal, installation, transportation or any other charges that may arise in connection with warranty claim.

The warranty period commences on the date of original purchase of the equipment. Proof of purchase and installation date, failure date, and supporting installation data must be provided when claiming repairs under warranty.

This warranty is subject to due compliance by the original purchaser with all directions and conditions set out in the installation and operating instructions. Failure to comply with these instructions, damage or breakdown caused by fair wear and tear, negligence, misuse, incorrect installation, inappropriate chemicals or additives in the water, inadequate protection against freezing, rain or other adverse weather conditions, corrosive or abrasive water, lightning or high voltage spikes or through unauthorized persons attempting repairs are not covered under warranty.

Walrus will not be liable for any incidental or consequential damages, losses, or expenses, arising from installation, use, or any other causes. There are no express or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above.

Certain states do not permit the exclusion or limitation of incidental or consequential damages or the placing of limitations on the duration of an implied warranty, therefore, the limitations or exclusions herein may not apply. This warranty sets forth specific legal rights and obligations, however, additional rights may exist, which may vary from state to state.

Supersedes all previous publications



**Walrus America Inc**

20220 Hempstead Road, Suite #30, Houston, TX 77065

Web: [www.walrusamerica.com](http://www.walrusamerica.com)