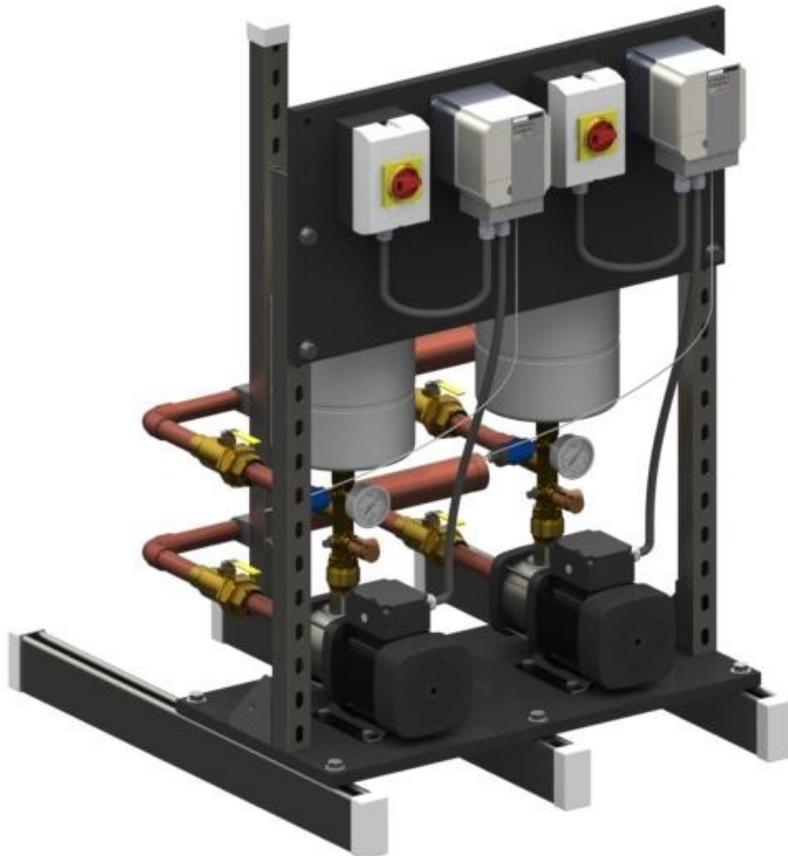


# Instruction and Operations Manual



Model: TW2018T  
"Doorway Duplex"  
Variable Frequency Drive (VFD)  
Booster Pump System

# 1. Safety, Operation & Maintenance

VF Drives have been programmed at Towle Whitney.  
Do not change any parameters without contacting Towle Whitney.

The pressure setpoint on each pump of the system can be changed by calling or emailing the factory.

## Operation

Once plumbed and wired, a Towle Whitney Booster Pump System operates automatically

- The pumps turn ON when there is a demand for water and system pressure drops
- The pumps go to standby “Sleep mode active” when the water demand is satisfied
- The drives are programmed to alternate the pumps every 24 hours of run time [adjustable]

## The pumps will Lead & Lag

As the water demand exceeds the GPM capacity of Lead Pump, the system pressure will start dropping, causing the Lag Pump to start operating and both pumps will maintain the pressure setpoint of the Lag pump.

## Maintenance

- By virtue of self lubricated bearings, the pump system does not require any preventive maintenance.
- The VF drive being an electronic device, **MUST** be protected from the elements. However, it does not require any periodic preventive maintenance.

Any questions please call 800-807-9827  
8a.m.- 4p.m. EST



### CAUTION!

Issues such as water softeners, filters, low producing wells, and galvanized pipes can affect the performance of the system.

### WARNING!

**Plumbing code requirements for a closed system:** The check valves installed on the Booster Pump System creates a closed system which restricts back flow and may result in thermal expansion issues. Please provide thermal expansion provisions and ensure proper testing & tamper-proofing of the T&P valve.



### WARNING!

This Booster Pump System must **ALWAYS** be protected from the elements. [unless specified otherwise].

**PRE-WIRED  
&  
TESTED**

Your Booster Pump System is prewired and water tested at the factory for satisfactory operation and may contain some water and pipe dope.

# 2. Installation Instructions

*All local building, electrical and plumbing codes must be followed.*

Towle Whitney Variable Speed Booster Pump Systems are built for ease of installation and quick hassle free start-up.



### **Step 1**

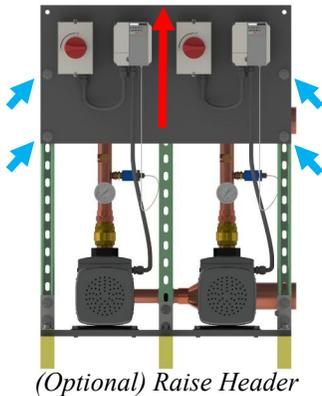
#### **Electrical**

Make appropriate electrical connections.

**Amperage requirements shall be taken from the Variable Frequency Drive NAMEPLATE ONLY.**

Each pump will always have a 3-phase motor.

Each Disconnect Box must be installed on independent circuits.



### **Step 2 (Optional)**

The VF Drive Header Panel can be raised by loosening four bolts, Max height 42", remember to tighten bolts securely.

### **Step 3**

Make appropriate plumbing connections.

#### **(Optional):**

Follow **2a** and **2b** instructions if Manifold Orientation needs to be changed.

#### **If bypass is installed**

*A swing type check valve must NOT be installed on the bypass line.*  
Check Valves are already installed.

### **Step 4**

Follow instructions in **2c** for expansion tank installation.

### **Step 5**

Open all shut off valves on the incoming line and outgoing line to the building including the four ball valves on the Booster Pump System.

If bypass installed: **BYPASS LINE MUST BE CLOSED**

Open/operate all fixtures in the facility to displace the air in the piping and pumps before startup!

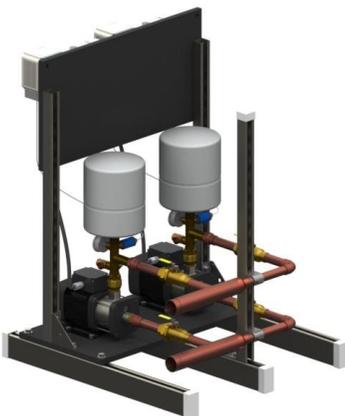
### **Step 6 Start-up**

Turn ON power to the system one pump at a time.

The VF Drives are pre-programmed at the factory and will turn on.

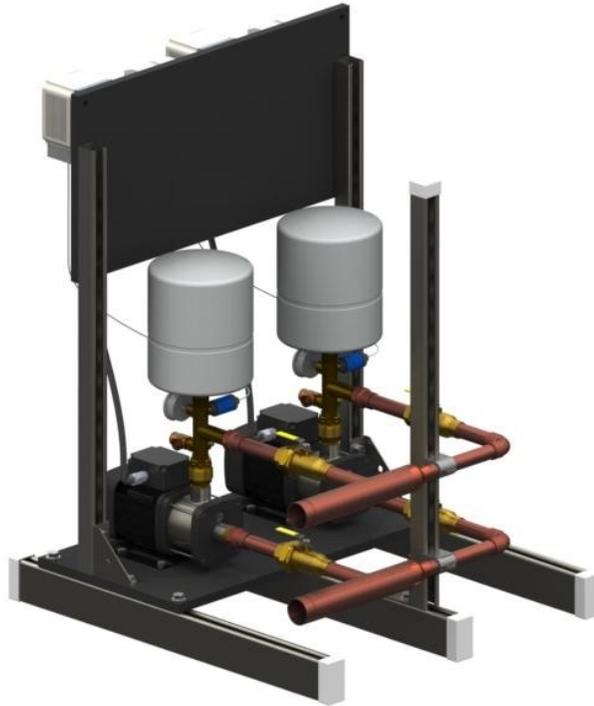
When the power is turned ON, each VF Drive AUTO mode light will turn ON and the Booster Pump System is operational.

If not, press the AUTO key on each VF Drive to start up Pump System.



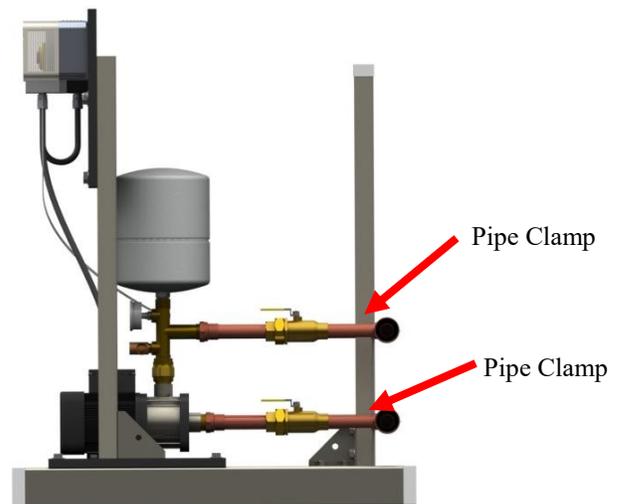
## 2a. Manifold Orientation

**Manifold access can easily be switched  
IN THE FIELD from RIGHT to LEFT**



Determine Suction and Discharge side (right or left).  
If needed, change orientation of piping **one at a time**:

1. Loosen Pipe clamp.
2. Loosen Union End ball valves.
3. Remove pipe and re-align.
4. Reverse step 1-3.



# Operation & Maintenance

VF Drives have been programmed at the factory.  
Do not change any parameters without contacting the factory.

The pressure setpoint on each pump of the system can be changed by calling the factory.

## Operation:

Once plumbed and wired, a Towle Whitney Booster Pump System operates automatically

- The pumps turn ON when there is a demand for water
- The pumps go to standby “Sleep mode active” when the water demand is satisfied
- The drives are programmed to alternate the pumps every 24 hours of run time [adjustable].

## The pumps will Lead & Lag

As the water demand exceeds the GPM capacity of Lead Pump, the system pressure will start dropping, causing the Lag Pump to start operating and both pumps will maintain the pressure setpoint of the Lag pump.

In case of a *power outage* or a *brown outage*

- Once the power is restored, the pump shall resume normal operation.
- If Pump System does not turn on.
  - Turn Pump System OFF using appropriate circuit breakers
  - Wait 5 minutes for the VF Drive capacitors to discharge
  - Turn system ON again.

In case of an *interruption of incoming water supply*

- the VF Drive will trip and the system will turn OFF to save the pump from running dry.
- Once the water supply is restored
  - Turn off the Pump System using appropriate circuit breakers
  - Wait for 5 mins for the VF Drive capacitors to discharge
  - Turn system ON and push the **AUTO** button on each drive.

## Maintenance:

- By virtue of self lubricated bearings, the pump system does not require any preventive maintenance.
- The VF drive being an electronic device, MUST be protected from the elements. However, it does not require any periodic preventive maintenance.

See also: *Troubleshooting and Automatic bypass.*

**NOTE: The VF Drive is factory preset. DO NOT change the settings in the VF Drive.**

Make the necessary power connections based on the type of power (220V / 480V).

Do not power up system yet.

## System Start-up:

- Turn on circuit breaker for 220V OR 480V pump system.
- Turn the disconnect switch to the ON position.
- Once power is provided, pump will start automatically.
  1. If Pump System does not turn on automatically, open a faucet or fixture and press the **AUTO** button. Pump will start up because there is demand for water.
- Close faucet. Pump will automatically stop and enter “sleep” when there is no water demand.
- You are ready to enjoy great water pressure.

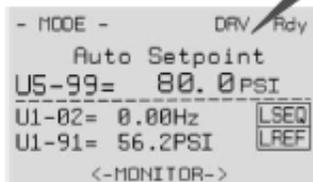


## SET SYSTEM SETPOINT

Next, press **ENTER** to access or modify the system setpoint that was entered using parameter Q1-01 System Setpoint in the iQpump Quick Setup Menu

Use **RESET** to select the digit and **M+** **M-** to change the system setpoint.

Next press **ENTER** to store setpoint and press **F1** to return to the main operation menu.



Next, press the **AUTO** button to start the iQpump.

**Example: 80 PSI**



**\*\*\* CONTACT TOWLE WHITNEY PRIOR TO MAKING ANY PARAMETER ADJUSTMENTS \*\*\***

# Troubleshooting

## **Short cycling:**

### ***Issue:***

- Pump turns ON / OFF every few minutes / seconds

### ***Solution:***

- Check for leaks in the line going from the pump to the building.
- Turn OFF the shut off valve on the discharge side of the pump and check to see if the pump turns OFF. If it does, there may be a leak in the water line,
- the pump continues to run after the shut off valve is OFF, ensure that water is not leaking back through the check valve on the suction side of the pump by turning OFF the shut off valve.
- The pump is governed by the controller which receives a pressure drop signal from the transducer. If there is a drop in pressure the pump will turn ON to increase the pressure up to the set point.

## **Constant operation:**

### ***Issue:***

- Pump operates constantly without any demand for water

### ***Solution:***

- Air may be present in the line going from the pump to the building. Open faucets to purge air out. When all fixtures are closed and no water is being drawn, air may get trapped within the lines causing the pump to not reach the pressure setpoint and hence cause it to operate continuously.

## **Shaft Noise:**

### ***Issue:***

- There is a squeaking noise at the end of a pump duty cycle

### ***Solution:***

- Lubricate the shaft through the gap between the pump casing and the motor.

## **Loss of incoming water supply:**

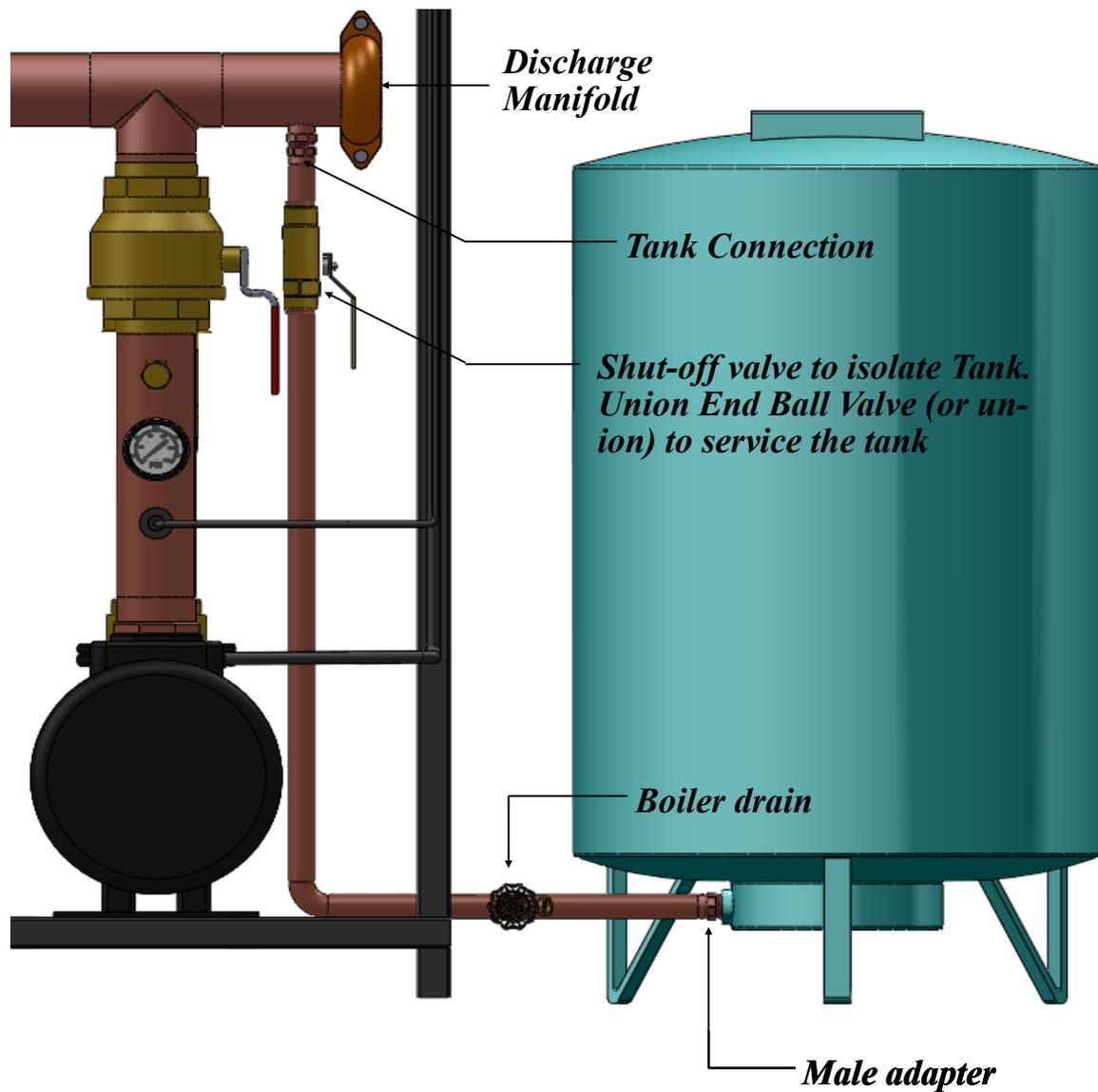
- The TW pump is programmed to stop and start automatically upon loss/restoration of incoming water supply.
  - However, if the pump does not start normal operation automatically, turn OFF the power to the pump, wait until the controller display goes blank and turn the power ON again. Push the **AUTO** button on each drive, if needed to start.
- 

## **Loss of power supply:**

- The TW pump is programmed to start automatically upon restoration of power supply.
  - However, if the pump does not start normal operation automatically, turn OFF the power to the pump, wait until the controller display goes blank and turn the power ON again. Push the **AUTO** button on each drive, if needed to start.

# Installation Instructions

- Check pressure in tank before installing.
- Pressure must be 10 psi below Booster System Set Pressure.
- Pipe the discharge manifold on labeled port. Follow recommended piping.



# Towle Whitney LLC Booster Pump Start-Up Sheet

Project:

Signature:

Date:

Name:

*This check-off sheet is intended to be an overview, and may NOT cover all local building, electrical, and plumbing codes which must be followed while installing and operating a booster pump system.*

**Booster system MUST be protected from the elements and any adverse environmental conditions.**



**1:** Ensure all electrical connections are per local code. Verify voltage and phase. *Note: All pumps are three phase. Amperage requirements shall be taken from the VFD nameplate.*

*Each Disconnect Box must be installed on independent circuits.*

**(Optional)**

The VF Drive Header Panel can be raised by loosening four bolts, Max height 42", remember to tighten bolts securely.

**2:** Ensure all plumbing connections are per local code.

**(Optional):**

Follow **2a** and **2b** Instructions if Manifold Orientation needs to be changed.

**2a:** Ensure all plumbing connections are tight:

- Grooved Couplings are tight
- SharkBite Ball valves are tight

**3.** If bypass is installed, **bypass line must be closed** [If using an "automatic" bypass, check valve **MUST** be in-line and spring loaded. A swing type check valve must **NOT** be installed on the bypass line.]

**4:** Ensure pneumatic expansion tank is installed on the discharge manifold of the system using the port provided. Tank's air pressure must be:

- Set with no water pressure against it
- Shall be 10psi LESS than system discharge pressure.

**5.** Open all shut off valves on the incoming line and outgoing line to the building, including all four ball valves on the suction and discharge manifolds of the booster system.

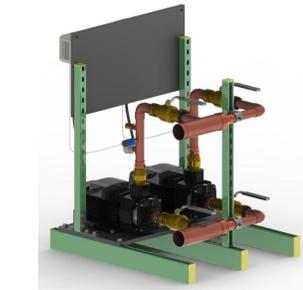
**6.** Open / operate all fixtures in the facility to displace the air in the pump system and piping (especially new construction) !

**7:** Turn ON power to PUMP ONE. The VF drives are pre-programmed at the factory. Ensure first pump runs quietly, and hits the discharge pressure and turns off. Turn off pump one.

**7a:** Turn ON power to PUMP TWO. Ensure PUMP TWO runs quietly, and hits the discharge pressure and turns off.

**7c:** Turn ON power to ALL PUMPS.

**7d.** Open/operate all fixtures and continue to displace air.



**Enjoy great pressure and energy savings!**