BISON PUMPS
The Power of Water in Your Hands

Model 1900 Stainless Steel Pitcher Pump

OWNER'S MANUAL

For Pump Revisions: B, C

Serial No. _____

Proudly Manufactured in Conway, Arkansas, UNITED STATES OF AMERICA.

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Appendix

Model 1900 Stainless Steel Pitcher Pump

Owner's Manual

Product Specifications

Description: The Bison Model 1900 Stainless Steel Pitcher Pump is a shallow well pump for static water levels less than 25 vertical feet and up to 300 horizontal feet from the water source.

Design and Construction

- Stainless Steel Construction of pump body, lift rod, handle, and hardware
- Hand polished stainless steel finish
- Over 19 ounces per stroke
- Less than seven (7) strokes to pump one (1) gallon of water
- Pumps up to 25 foot depth
- No priming needed
- No routine maintenance
- Hose Bibb Spout (to connect Pressurizing Kit or a water hose)
- Suitable for Kitchen Installation
- Lifetime Warranty

Options

- Drain back option for easy winterization
- Pressurizing Kit (able to pressurize home water system)

Dimensions

- Overall height: 23"
- Body Diameter: 3"
- Weight: 20 pounds
- Inlet connection: 2" NPT
- Spout connection: ¾" Garden Hose male thread
- Handle: 24"
- Bottom Flange: 7" diameter with square holes for 3/8" carriage bolts

Contents

- (1) - Stainless Steel Manual Hand Pump
- (1) - Brass Hose Bibb Cap
- (4) - Installation Bolts/Nuts/Washers (Optional)
- (1) - Owner's Manual

Installation Options

Warning – You must comply with your local plumbing code. Contact a certified plumber if you have questions about proper plumbing codes in your area.

Before you begin the installation of your new Bison Pump, open the box and inspect the contents. Verify that you have received everything that you ordered. If there is anything that is missing or doesn't match, please call Bison Pumps immediately to correct the situation (1-800-339-2601).

Record your Bison Model 1900 Pump Serial Number on the front page of this manual.

Location – Before deciding on the location of your Bison Pump, you should consider whether you intend to use it to pressurize your home water system. If you do, then you should consider the location of your pressure tank drain valve or other access location (i.e., yard hydrant or outside faucet) in relation to the pump's location. Our Optional Pressurizing Kit (55-001-0-03-01) or Check Valve with pressure gauge (55-001-0-01-01) would have to be installed onto the spout of the pump and a hose ran from the pressurizing kit to the access location for your pump to pressurize the water system. Be certain that you have an accessible path from the pump spout to the water system access point and clearance for handle functionality. See "How to Pressurize a Water System" and Detail H for more information.

Read the instructions completely before beginning the installation process.

Installing Indoors with a Countertop

Step #1: Verify there is proper space for the hand pump and pipe

See Installation Measurement Detail to reference Bison Model 1900 Stainless Steel Pitcher Pump measurements for a standard countertop installation. Review your countertop space above and below where the pump is to be installed. Verify that there is proper clearance for the bottom flange (Detail A – Item A) on the countertop and no obstructions for the anchor bolts (Detail A – Item B) and water pipe (Detail A – Item C) underneath.

Step #2: Determine installation items needed

Tools: Drill, 3 ½" hole saw, 3/8" or 7/16" drill bit, 9/16" socket and ratchet (or wrench) and 5/32" Allen wrench.

Anchor bolts – Determine the thickness of the countertop plus ¼" for the thickness of the bottom flange (Detail A – M1). Add at least another ½" for the nut and washer to that total. This measurement determines the minimum length of anchor bolt that you require. If purchased, the Installation Kit includes (4) 3/8" x 2 ½" long stainless steel carriage bolts and stainless steel washers and nuts.

Reducing Bushing – The Model 1900 comes standard with a stainless steel 2" NPT female connection. Determine the diameter of the incoming pipe providing the water source to the pump. If your incoming water pipe is less than 2" NPT, then a Reducing Bushing will need to be installed in the hand pump prior to installation. Bison Pumps offers a stainless steel reducing bushing to downsize from 2" to 1 1/4" or 1" NPT pipe (Details K & L – Items 21,22). See Detail L or "Other Accessories" at the end of this manual for ordering information.

Ball Valves and Tees – If you are connecting into a system that has some type of electric pump then you will likely need at least two ball valves and one tee. See Details B-1, B-2, B-3 & C for possible installation methods. Bison Pumps recommends Brass or Stainless Steel Ball Valves to ensure that the vacuum is not lost through a non-metal Ball Valve.

Step #3: Identify proper location, mark and drill holes

Determine the exact location you would like to place the Bison Model 1900 Stainless Steel Pitcher Pump on the countertop. Refer to Detail D for a standard installation near a sink. Placing the pump near the sink allows the pumped water to flow directly into the sink. Do not place the pump underneath cabinets (or other overhead items) that could cause pumping action restrictions.

Once you have determined the exact location of the hand pump, mark a line along the entire perimeter of the bottom flange (Detail D – Item A). From the center of the straight edge line (Detail D – Item B), measure 2 ¾" to the center of the hole and mark the location (Detail D – M1). Drill a clearance hole at

least 3 ½" in diameter (Detail D – M2) through the countertop to allow clearance for the incoming water pipe and reducing bushing.

If required, install the reducing bushing into the 2" NPT on the bottom of the pump (if you purchased the reducing bushing from Bison Pumps it will already be installed). Be sure to apply Teflon tape to the threads prior to installation. Next, align the pump along the perimeter of the bottom flange drawn earlier. Once the pump is in the proper position, trace the anchor bolt holes and mark the center of each hole. Remove the pump from the countertop. Using a 3/8" or 7/16" drill bit, drill holes through the countertop for each anchor bolt.

Step #4: Attach hand pump to the countertop

Align the pump over the anchor bolt holes and install the four (4) bolts through the top of the counter. Attach the washers and nuts by partially tightening the first nut. Then move to the nut diagonally opposite. Repeat by moving to the other two in the same manner. Once all four are partially tightened, completely tighten all four following the same pattern.

Step #5: Adjust the handle orientation

The pump will come with the handle in either the 3, 6, or 9 o'clock position (assuming the spout is at 12 o'clock). To adjust the position of the handle, remove the four top screws (Detail E – Items A) in the Top Plate using a 5/32" Allen wrench. Rotate the handle to either a 3, 6, or 9 o'clock position as desired. Once the proper position is found, replace the four top screws into the Top Plate. Be sure to re-tighten the screws by partially tightening the first one. Then proceed in a pattern going diagonally across to the next one until all four are partially tightened. Repeat the process and completely tighten each screw.

Step #6: Connect the water source to the pump

The Bison Model 1900 Stainless Steel Pitcher Pump can accept 2" NPT pipe. Again, if your incoming water pipe is less than 2" NPT, then you will need a reducing bushing to downsize the pipe from 2" NPT to the size of your water supply pipe. Bison recommends using at least 1" NPT pipe. **Be sure you know what size your water pipe is before purchasing this component.** Apply Teflon tape to the water supply pipe and then connect the water supply pipe to the pump connection by hand tightening.

Note 1: To drain the pump and water pipe there must be a free flow of water back to the source. Therefore, it is important to **NOT** install a check valve or foot valve in the water pipe at any point between the pump and the water source.

Note 2: If your water source is not a well, such as a pond or stream, then you should install a "wye" screen filter in the pipe.

Step #7: Pump water

The installation is complete. Begin pumping the Bison Model 1900 Stainless Steel Pitcher Pump until water begins to flow. It is not necessary to prime the pump.

Installing on a Driven Well Point with a 2" NPT

Step #1: Determine the material type of the casing

Steel: If the casing is steel, then the Bison Model 1900 Stainless Steel Pitcher Pump can be installed without any further additions (Detail F – Item A).
PVC: If the casing is PVC, then Bison Pumps recommends that some type of support structure (Detail F – Item B) be built on which the pump will be installed (like a countertop installation). The PVC pipe may not be rigid enough to support the pumping action and could result in damage to the PVC pipe.

Step #2: Connect the water pipe casing to the pump

The Bison Model 1900 Stainless Steel Pitcher Pump can accept 2" NPT pipe. Apply Teflon tape to the threads of the 2" NPT pipe casing. Carefully place the pump over the pipe casing and begin threading it onto the pipe casing. Be very careful not to overtighten onto the casing. Turn the pump until it is hand tight. Adjust the spout orientation to your requirements without overtightening.

For installations using a support structure, follow the instructions for countertop installations.

Note 1: To drain the pump and water pipe, there must be a free flow of water back to the source. Therefore, it is important **NOT** to install a check valve or foot valve in the water pipe at any point between the pump and the water source.

Step #3: Adjust the handle orientation

The Bison Model 1900 Stainless Steel Pitcher The pump will come with the handle in either the 3, 6, or 9 o'clock position (assuming the spout is at 12 o'clock). To adjust the position of the handle, remove the four top screws (Detail E – Items A) in the Top Plate using a 5/32" Allen wrench. Rotate the handle to either a 3, 6, or 9 o'clock position as desired. Once the proper position is found, replace the four top screws into the Top Plate. Be sure to re-tighten the screws by partially tightening the first one. Then proceed in a pattern going diagonally across to the next one until all four are partially tightened. Repeat the process and completely tighten each screw.

Step #4: Pump water

The installation is complete. Begin pumping the Bison Model 1900 Stainless Steel Pitcher Pump until water begins to flow. It is not necessary to prime the pump.

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Installing into a System with Electric Pumps

Conventional Electric Submersible Pump

The Model 1900 Stainless Steel Pitcher Pump can be installed alongside a conventional electric pump if the total vertical lift is 25 feet or less. The total vertical lift is the distance from the bottom of the pump to the static water level (See Detail I). The pump should be piped into the same pipe that brings the water from the well into the pressure tank. The connection should go through a system consisting of two (2) ball valves and one (1) tee. (Detail B-1).

One-Pipe Jet Pump

With a One-Pipe Jet Pump installation, the Model 1900 Stainless Steel Pitcher Pump can be installed if the total vertical lift is 25 feet or less. The total vertical lift is the distance from the bottom of the pump to the static water level (See Detail I). The pump should be piped into the same pipe that brings the water from the well into the pressure tank. The connection should go through a system consisting of two (2) ball valves and one (1) tee. See (Detail B-2).

Two-Pipe Jet Pump

With a two-pipe jet pump installation, the Model 1900 Stainless Steel Pitcher Pump can be installed if the total vertical lift is 25 feet or less. The total vertical lift is the distance from the bottom of the pump to the static water level (See Detail I). The pump should be piped into the larger diameter pipe that brings water from the ejector into the jet pump through a system consisting of two (2) ball valves and one (1) tee. A third ball valve should be installed in the smaller diameter pressure pipe that comes from the two-pipe jet pump to the ejector. This stops the flow of water from the pressure pipe when the Model 1900 pump is in use. (Detail B-3).

How to Winterize the Pump

a) If your pump has the Drain Back Feature

To winterize the pump, you need to drain it of water to prevent freezing which can cause damage to the pump. The Bison Model 1900 Stainless Steel Pitcher Pump is equipped with special drain features inside the pump body that allow water to drain from both above and below the piston (Detail G).

Step #1: Drain water from pump body

Before draining, remove the brass hose bibb cap or pressurizing check valve from the spout.

The Bison Pumps Drain Back Water Shut-off Valve and Drain Valve should be installed on the incoming water line leading to the pump. See Detail J for the installation and operation of the drain back water shutoff valve and drain valve. Close the drain back water shut-off valve. A hose can be attached to the drain valve if desired. Open the drain valve by turning it counterclockwise (prepare a way to gather the water coming out the drain valve).

Raise the handle to the upper most position (Detail G – Item A). The pump has now engaged the Drain Valve and Drain Activator for the Piston Check Valve. This allows water to drain from above and below the piston back to the water source. Hold the handle at its upper most position until all water drains from the pump body.

Step #2: Lower handle to normal resting position

Now lower the handle to the standard resting position. Now the drain valve can be closed (turn clockwise until tight).
Do **NOT** stroke the pump while the shut-off valve is closed. This may create a vacuum on the pump, causing the handle to remain in an upright position.

b) If your pump does not have the Drain Back Feature

To winterize this pump, you must remove it from its mounting location.

Step #1: Turn OFF the water supply to the pump and disconnect the water source.
Step #2: Pump the handle to remove as much water as possible from the pump.
Step #3: Disconnect the pump from the mounting location.
Step #4: Disconnect the Rod Connector from the Handle.
Step #5: Remove the four screws from the Top Plate and pull the Top Plate/Piston Assembly out of the pump body.
Step #6: Drain all water from the pump body.
Step #7: Inspect the Piston Assembly for any wear, etc. that may need to be addressed.

Step #8: Let the inside of the pump dry and then spray Extra Virgin Olive Oil inside at the top of the pump body. Reinstall the Piston Assembly and Top Plate. Reattach the Rod Connector to the Handle.
Step #9: Store pump in a dry location until needed for reinstallation.

Adding Food-Grade RV Antifreeze

In extreme freezing conditions the addition of a Food-Grade Antifreeze to the inside of the pump can help ensure the safety of the pump's internal components. Be sure to only use FOOD-GRADE RV ANTIFREEZE inside the pump body.

To add Food-Grade RV Antifreeze, remove the four screws as described for the handle orientation adjustment (Detail E – Item A). Grasp the handle and slowly raise it. Then rotate and pull the Top Plate and Lift Rod with an upward motion. Once there is a sufficient opening (a couple of inches) add the proper amount of Food-Grade Antifreeze per the manufacturer's recommendation. Return the Top Plate to its original position and replace the four top plate screws. The process is complete.

Dewinterizing

Be sure that the weather has warmed sufficiently before continuing with this process, assuming the pump is not in a heated environment.

Step #1: Open water access

If the water source valve was closed during the draining operation, turn the valve on to allow the pump to have access to water. If using the Bison Pumps Drain Back Water Shut-off Valve and Drain Valve, open the drain back water shut-off valve and make sure the drain valve is closed.

Step #2: Pump water

If Food-Grade Antifreeze was added to the pump, then you should pump water until the color of the Food-Grade Antifreeze is no longer visible.

Note: If you initially have difficulty moving the handle, you may need to warm the pump manually (with your hands held on the side, for example). Do not force the handle to move as this could cause damage to the seals.

How to Pressurize a Water System

Tools required: Pipe Wrench, Check Valve, Pressure Gauge and Potable Water Hose*

* Bison Pumps offers a Pressurizing Kit consisting of a Lead-Free Brass Check Valve, a 100 PSI Pressure Gauge, a Bleed-off Valve, and a 10' Potable Water Hose. See "Other Accessories" at the end of this manual for ordering information.

Step #1: Turn OFF the power to the electric pump - even if the power source is out

If you are pressurizing a system that normally uses an electric water pump, you will need to turn off the power to the pump before pressurizing with the hand pump. If the power is restored and the electric pump begins operating, damage or flooding through the pump could occur. Therefore, **TURN OFF POWER TO THE ELECTRIC PUMP.**

Step #2: Close off the water source to the pressure tank from an electric pump

When pressurizing begins, the pump will draw from the water source. Water system access by electric pumps must be closed so that water is only accessible by the hand pump.

Step #3: Connect the hand pump to the pressure tank

To pressurize your water system, connect the Check Valve (to prevent water backflow), Pressure Gauge (to know when the pressure tank is full), and a Potable Water Hose (to transfer the water) to the spout of the hand pump. Connect the hose to the drain valve on the pressure tank. (Detail H)

Bison Pumps recommends using our Pressurizing Kit which contains all the required components. After the Pressurizing Kit is installed, open the tank drain valve (Detail H – Item E) on the pressure tank. **DO NOT DISCONNECT THE HOSE FROM THE CHECK VALVE OR THE CHECK VALVE FROM THE SPOUT WHILE THE PRESSURE TANK DRAIN VALVE IS OPEN**. Doing so will cause all water to flow out of the pressure tank.

Step #4: Pump water into the pressure tank after tightening the Gland Nut

Determine the amount of pressure that your pressure tank requires to be full. For most pressure tanks this is 40 to 60 PSI. The pressure inside your pump will be higher than under normal operating conditions. Therefore, before beginning to pressurize, the pump's Gland Nut (Detail H – Item A) must be adjusted to prevent leakage at the point where the Lift Rod exits the Gland Nut.

To adjust the Gland Nut for pressurization, begin pumping water into the pressure tank. If water leaks during pressurization, tighten the gland nut in ¼ turn increments until leaking stops. Continue pumping while watching the Pressure Gauge until the desired pressure is reached. Do not over tighten the gland nut as it could cause the pumping action to be more difficult or cause damage. Close the pressure tank drain valve to close off water access from the hand pump.

The hose is under pressure from the pressure tank drain valve to the Check Valve at the pump spout. Before removing the hose, slowly open the bleed-off valve (Detail H – Item C) on the pressurizing system. Prepare the area for excess water by having a bucket available to catch the water from the bleed-off valve and hose. Once the immediate pressure is released, then the hose can be detached from the pump and/or pressure tank.

Step #5: Use your water system

With the pressure tank full, you can use any water fixture in your home. Be aware that you only have the amount of water that can be held in the tank available. Therefore, you should conserve the amount of water used to minimize the need to refill the tank by pressurization. When the tank pressure is too low for normal usage, you will need to repeat the pressurizing process.

Step #6: Return to use of electric pump

Close the pressure tank drain valve and reset the water flow valves to accept water only from the electric pump. Turn the power on to the electric pump to allow it to begin normal operations.

Step #7: Return the Model 1900 pump to normal operating condition

Loosen the Gland Nut (Detail H – Item A) until water leaks during normal pumping action. Next hand-tighten the Gland Nut in ¼ turn increments until leaking stops. This will be the ideal setting for the Gland Nut and ease of pumping operation. It is not necessary to use a wrench to tighten the Gland Nut. Do not over tighten the gland nut as it could cause the pumping action to be more difficult or cause damage.

If the Gland Nut squeaks apply a small amount of Extra Virgin Olive Oil. This is used for lubricating the pump internally. Do not use petroleum products to lubricate the pump.

Maintenance

Replacement components are shown in Details K & L.

Under normal operating conditions, your Bison Pump should not require maintenance beyond winterization. However, some situations can result in excessive wear and/or damage to various pump components.

Cup Seals and O-ring – Under normal usage these seals should last many years. The wear on these parts is directly related to the amount of usage of the pump and the condition of the water being pumped. Water that has contaminants that could act as an abrasive will cause excessive wear on the Packing Gland, Piston Cup Seals and O-rings.

In cases of the combination of high usage and/or low water quality, the sealing components may need to be replaced. Bison Pumps offers a **Seal Maintenance Kit** which consists of replacements for sealing components in the pump and a Seal Pick Tool. See the table below for contents of the Seal Maintenance Kit. Instructions are included with the Seal Maintenance Kit.

Bison Pumps Seal Maintenance Kit Includes:

Part Number	Description	Quantity
04-000-1-50-19	Ny-Loc Nut, Shoulder Bolt	1
04-000-1-50-20	Ny-Loc Nut, Link Connection	2
04-000-5-40-01	Link Washer	12
04-000-5-40-02	Backing Washer	1
04-000-5-75-01	Check Valve	2
04-001-3-71-01	Packing Gland Cup Seal	1
04-002-3-71-01	Piston Cup Seal	2
04-022-1-68-01	Internal Snap Ring	2
04-070-3-70-01	Drain Valve Seat O-Ring (drain back feature only)	1
04-070-3-70-02	Drain Pin O-Ring (drain back feature only)	1
04-139-3-70-02	O-Ring Buna	1
50-001-0-04-05	Rod Connector Screw	1
50-001-0-08-02	Custom Low-Profile Fastener	1
50-100-0-07-00	Packing Gland Nut	1
50-100-0-08-05	Bottom Bushing	1
55-001-0-07-00	Seal Pick Tool	1

Note: Bison Pumps recommends thoroughly cleaning the inside components of the pump during this maintenance process. It is best to remove components that will be replaced first, then clean the inside of the pump and then install the new components. During this process, inspect the Check Valves in the bottom of the Piston and Check Valve Housing in the bottom of the pump body. Look for any large debris that may prevent the Check Valve from closing. Clean any debris found inside the Check Valves. With proper care, these Check Valves should last a lifetime. However, large debris can damage them in extreme situations. If over time the pumping action becomes more difficult, apply Extra Virgin Olive Oil to the piston cup seals and inside the pump body. Do not use petroleum products to lubricate the pump.

See “Other Accessories” below and Detail K for ordering details.

Hardware Maintenance – With proper care, it is unlikely that you will need to replace the hardware used to assemble your Model 1900 Stainless Steel Pitcher Pump. However, Bison Pumps offers the hardware separately under “Other Maintenance Items.”

Other Maintenance Items

Part Number	Description	Quantity
50-001-0-03-07	Handle Rubber Bumper	1
05-001-6-04-01	Bronze Bushing	1
50-001-0-06-00	Hose Bibb Cap	1
50-001-0-03-01	Handle Assembly	1
04-000-1-60-15	Drain Valve Spring	1
50-001-0-21-01	Drain Pin Seat Tool	1

Other Accessories

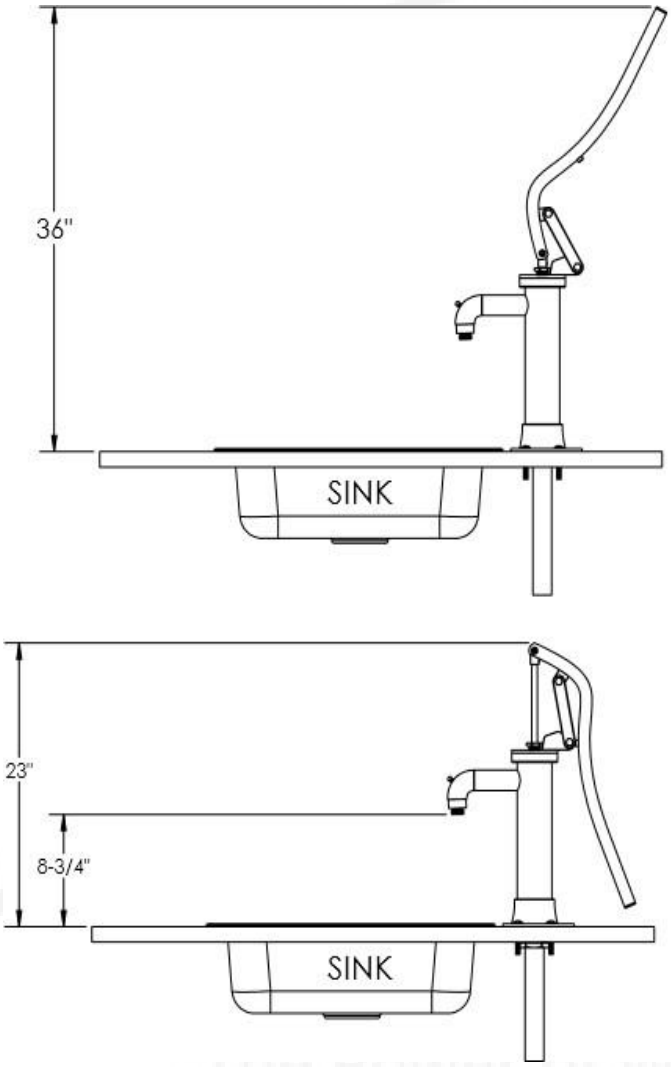
Part Number	Description	Quantity
55-001-0-03-01	Pressurizing Kit (Check Valve, Gauge & Hose)	1
55-001-0-01-01	Check Valve with Pressure Gauge	1
55-001-0-02-00	Potable Water Hose, 5/8” x 10’ with Stainless Steel Fittings	1
04-029-0-74-01	Reducing Bushing, Stainless Steel 2” to 1 ¼” NPT	1
04-029-0-74-02	Reducing Bushing, Stainless Steel 2” to 1” NPT	1

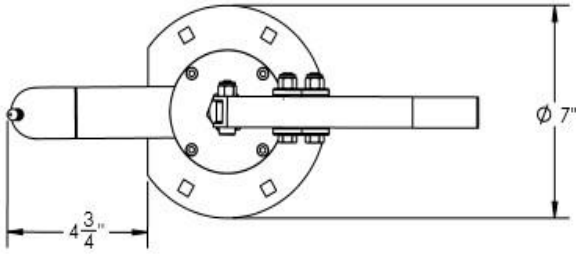
Contact

For questions about your product, you can email technical support at sales@BisonPumps.com or call our toll-free number **1-800-339-2601**.

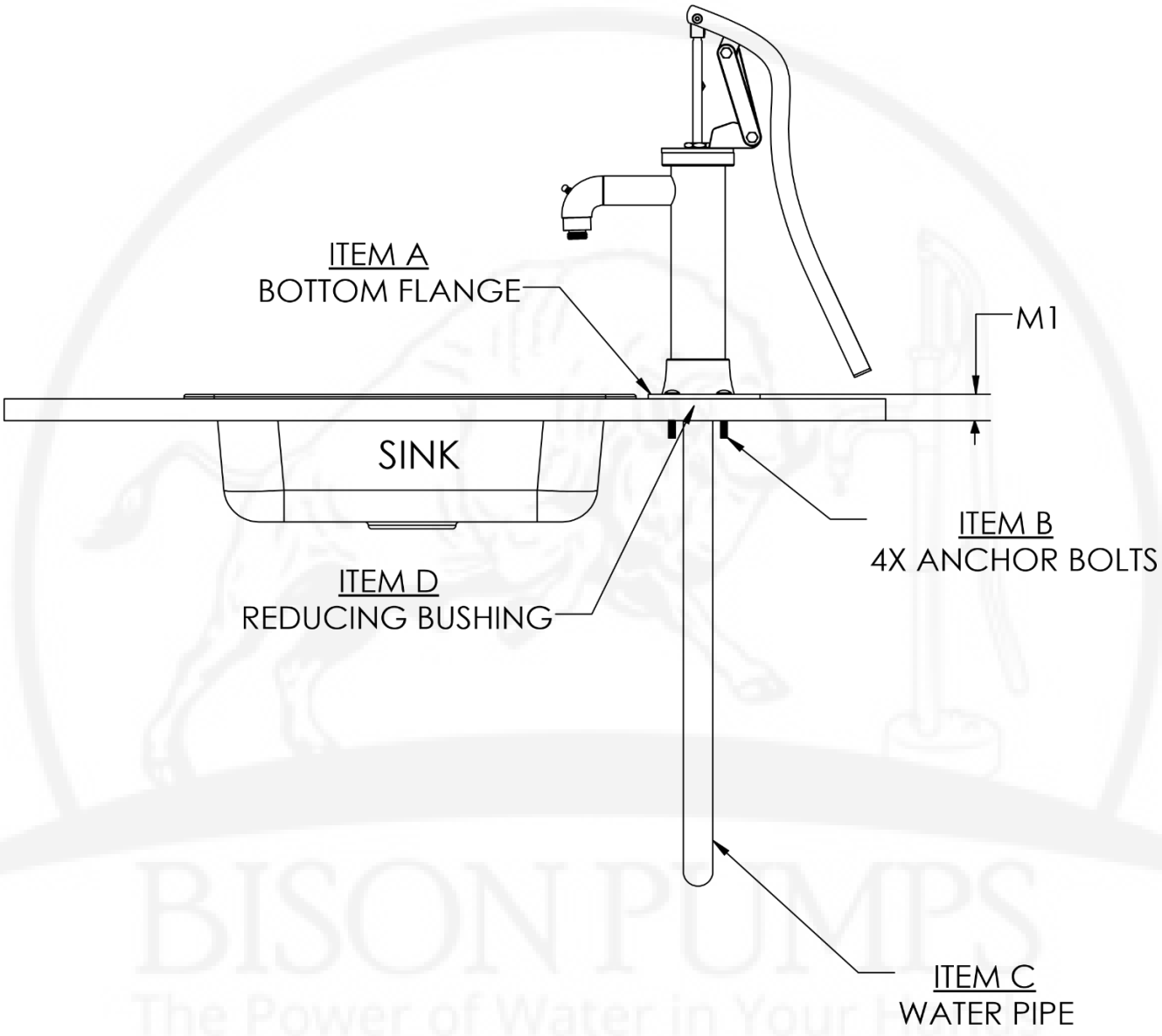
Appendix

Installation Measurement Detail

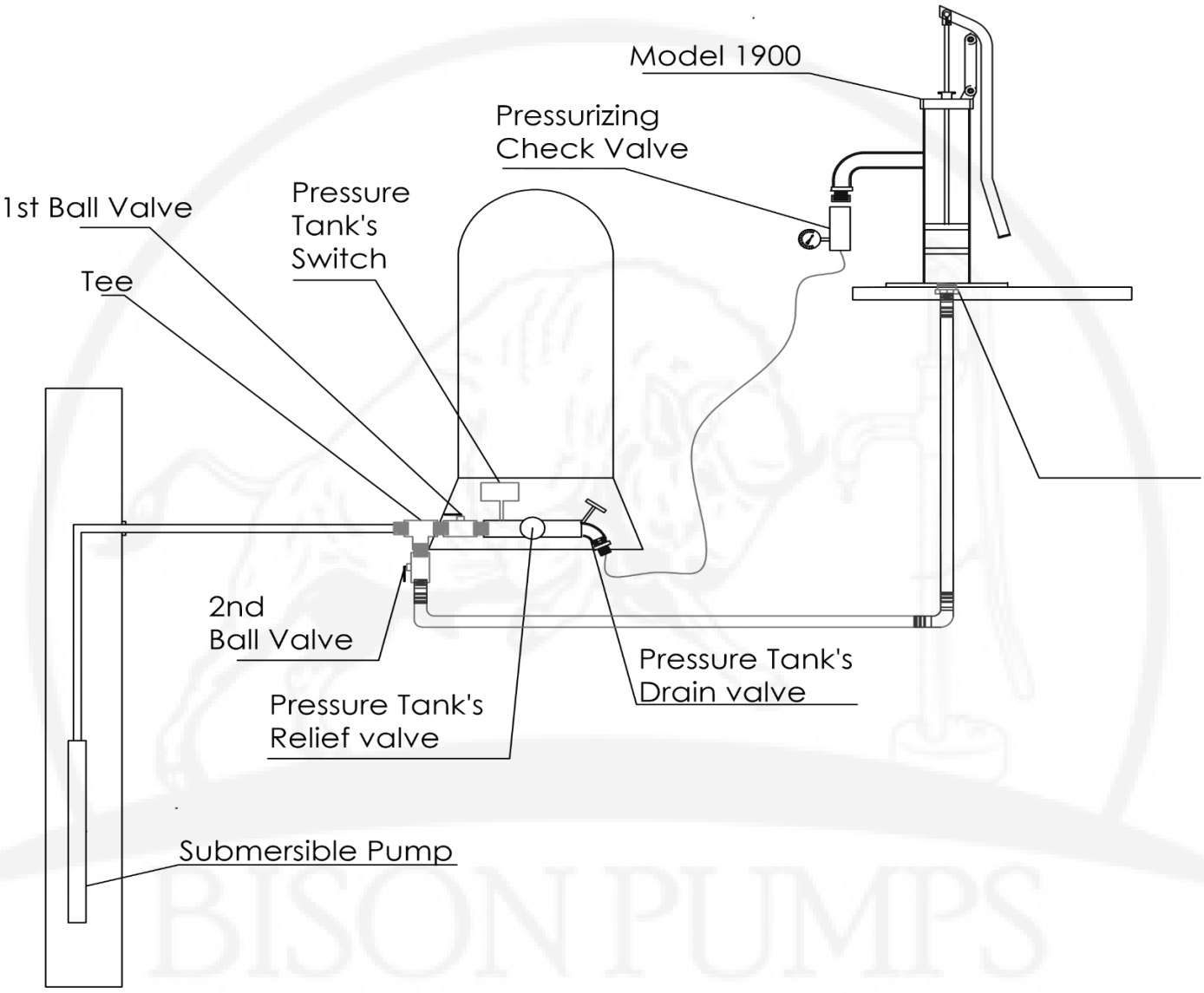




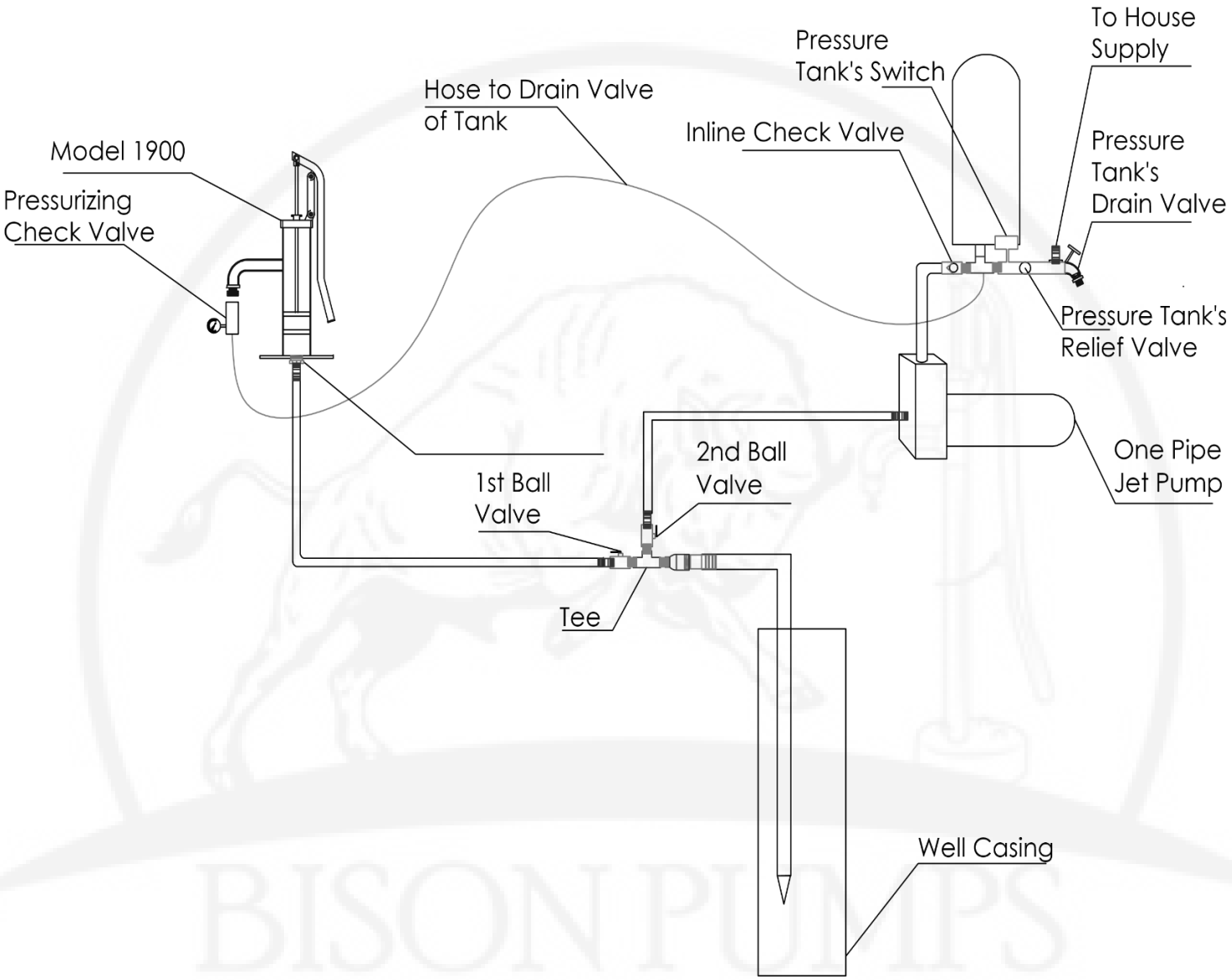
Detail A: Standard Sink Installation



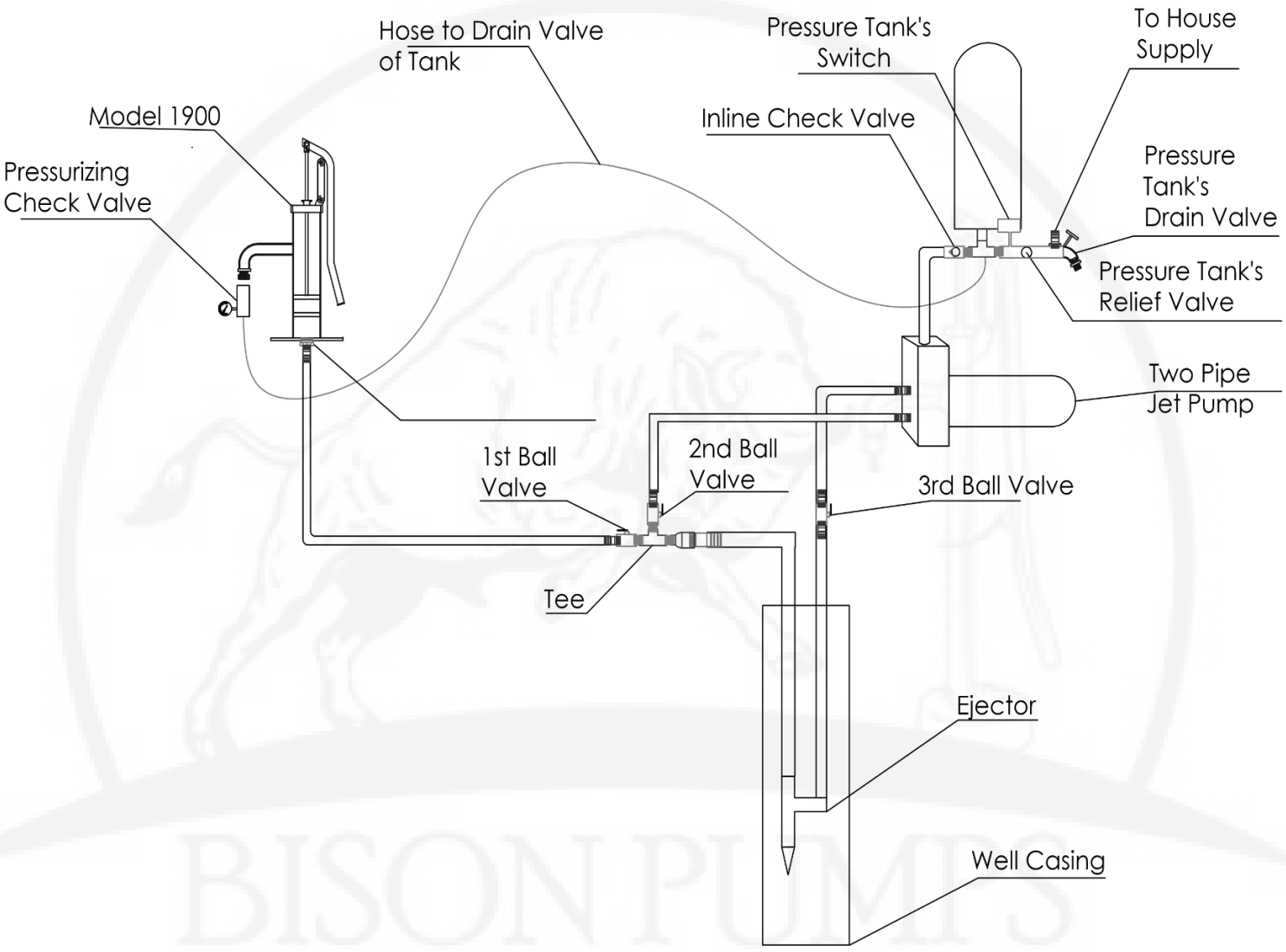
Detail B-1: Standard Submersible Pump



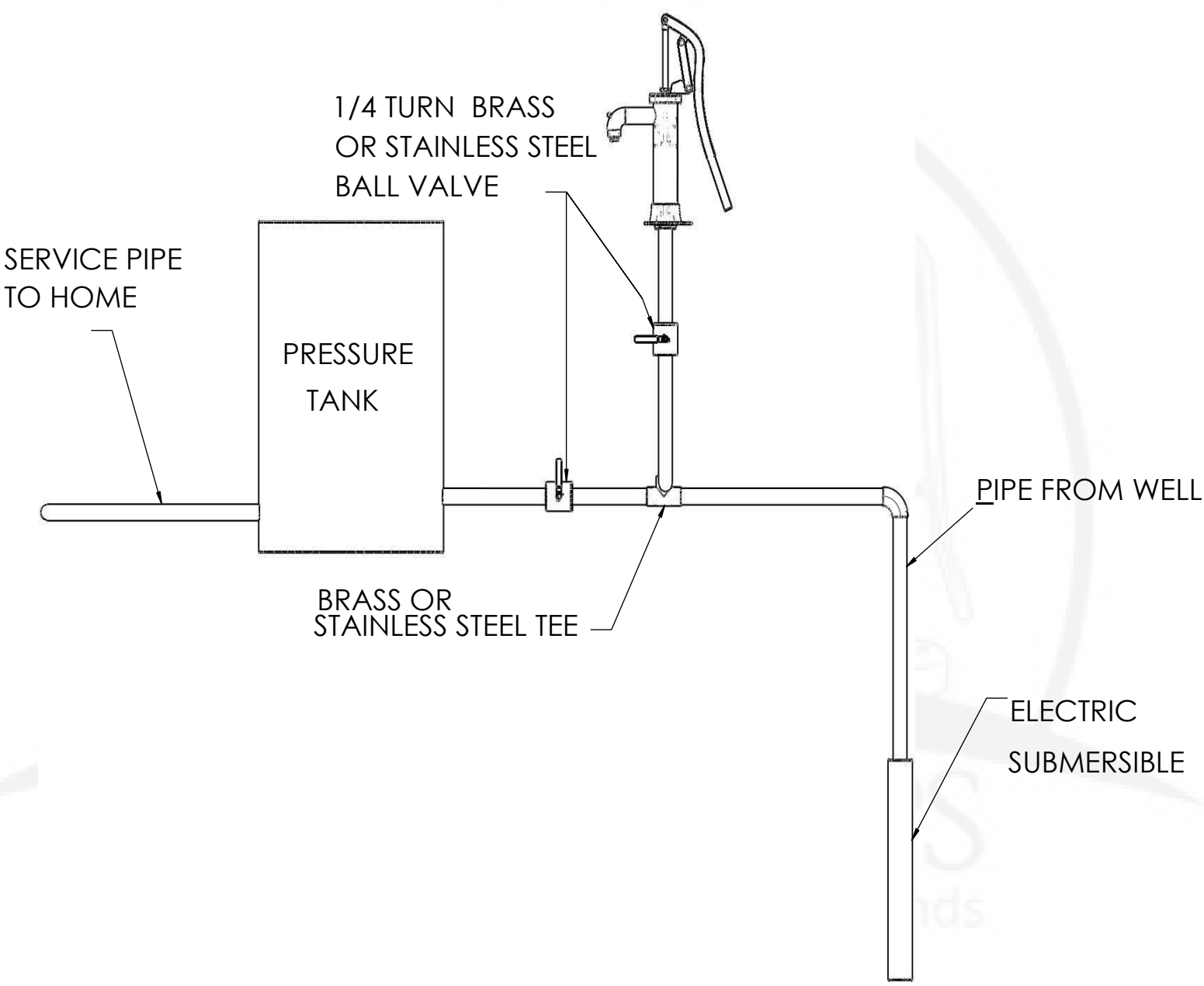
Detail B-2: One-Pipe Jet Pump



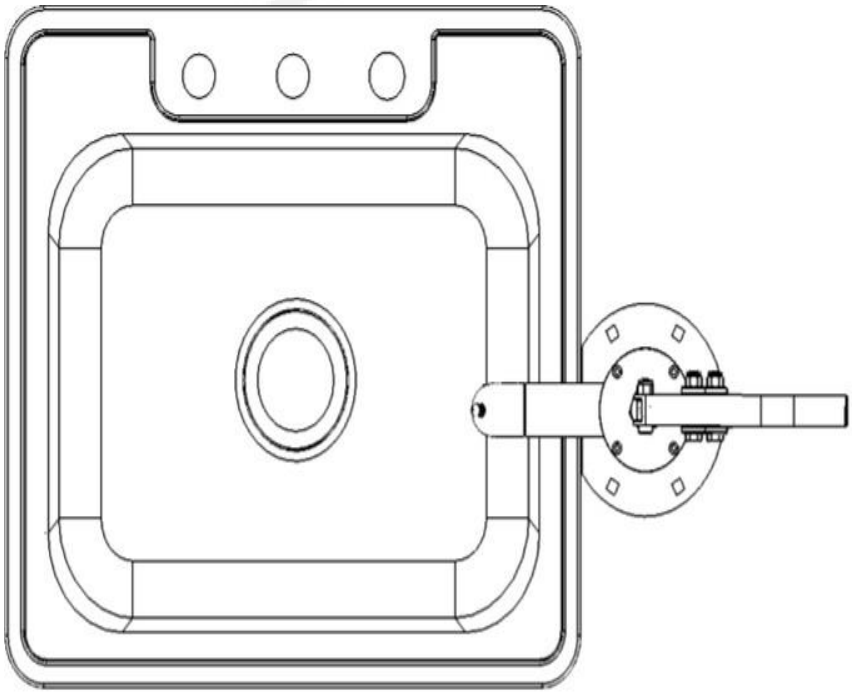
Detail B-3: Two-Pipe Jet Pump

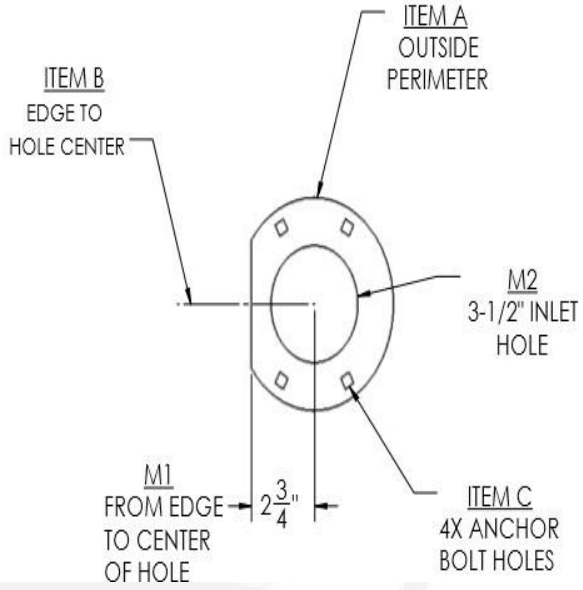


Detail C: Standard Installation with a Pressure Tank

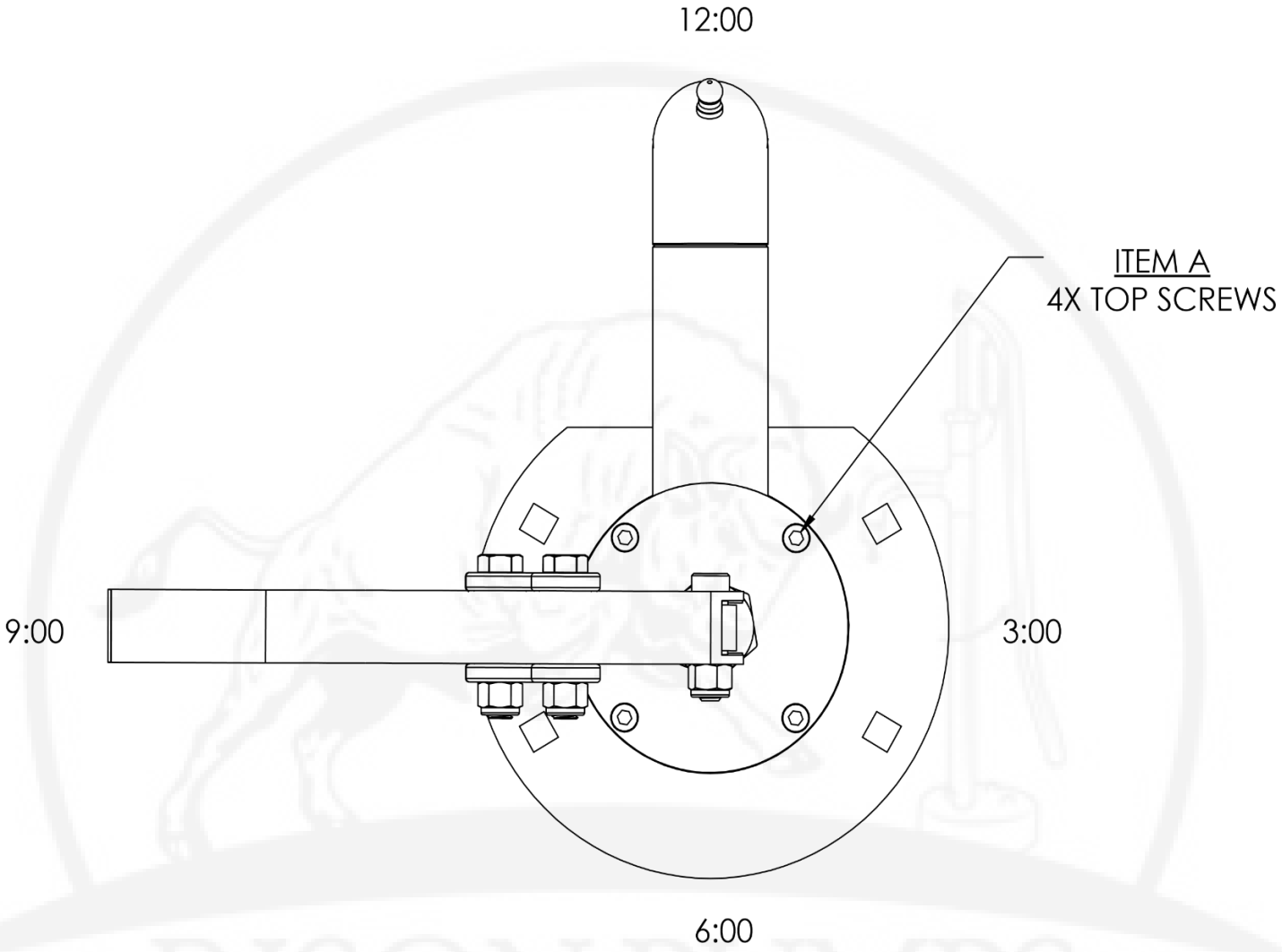


Detail D: Orientation of Sink Installation

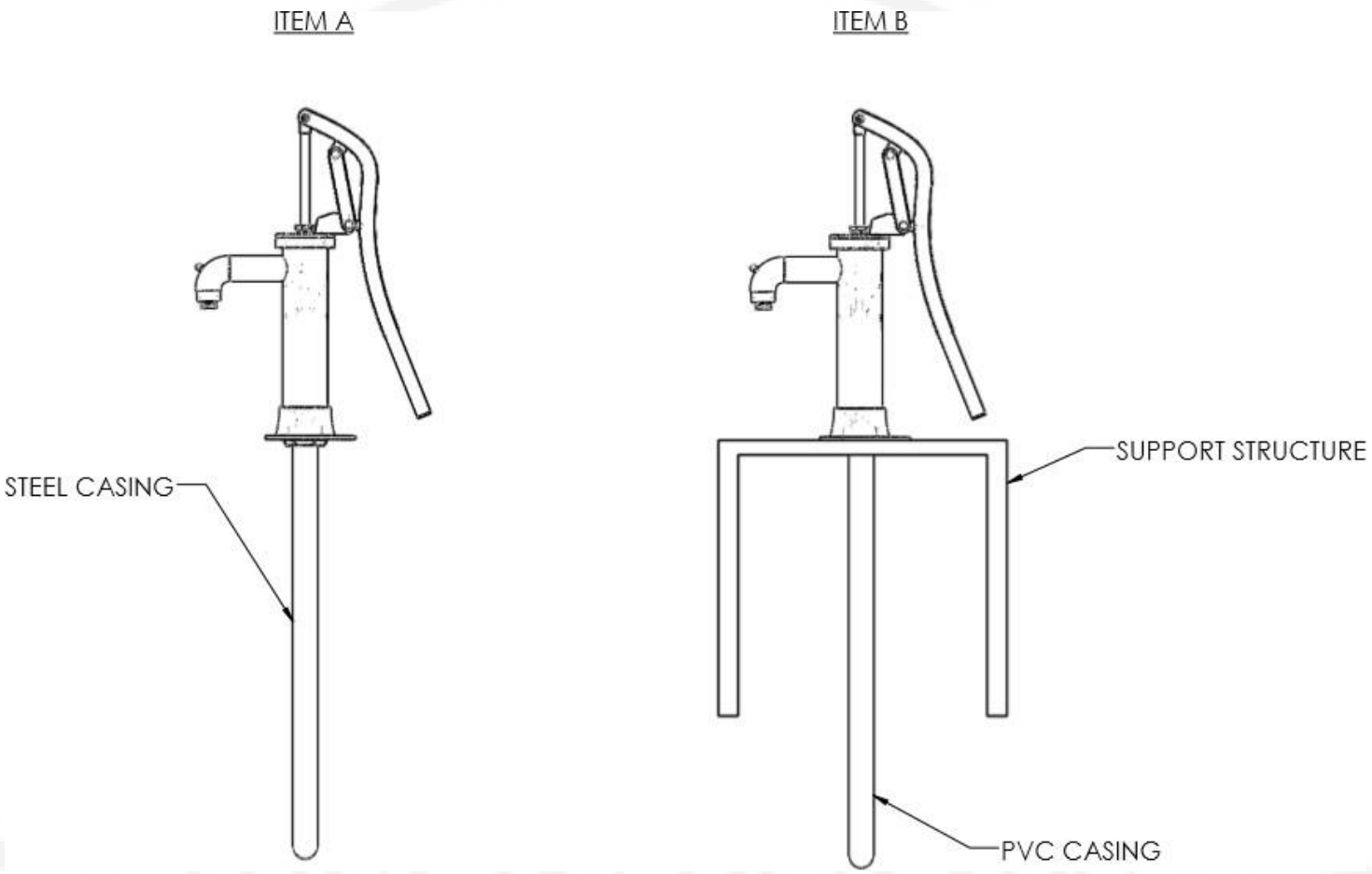




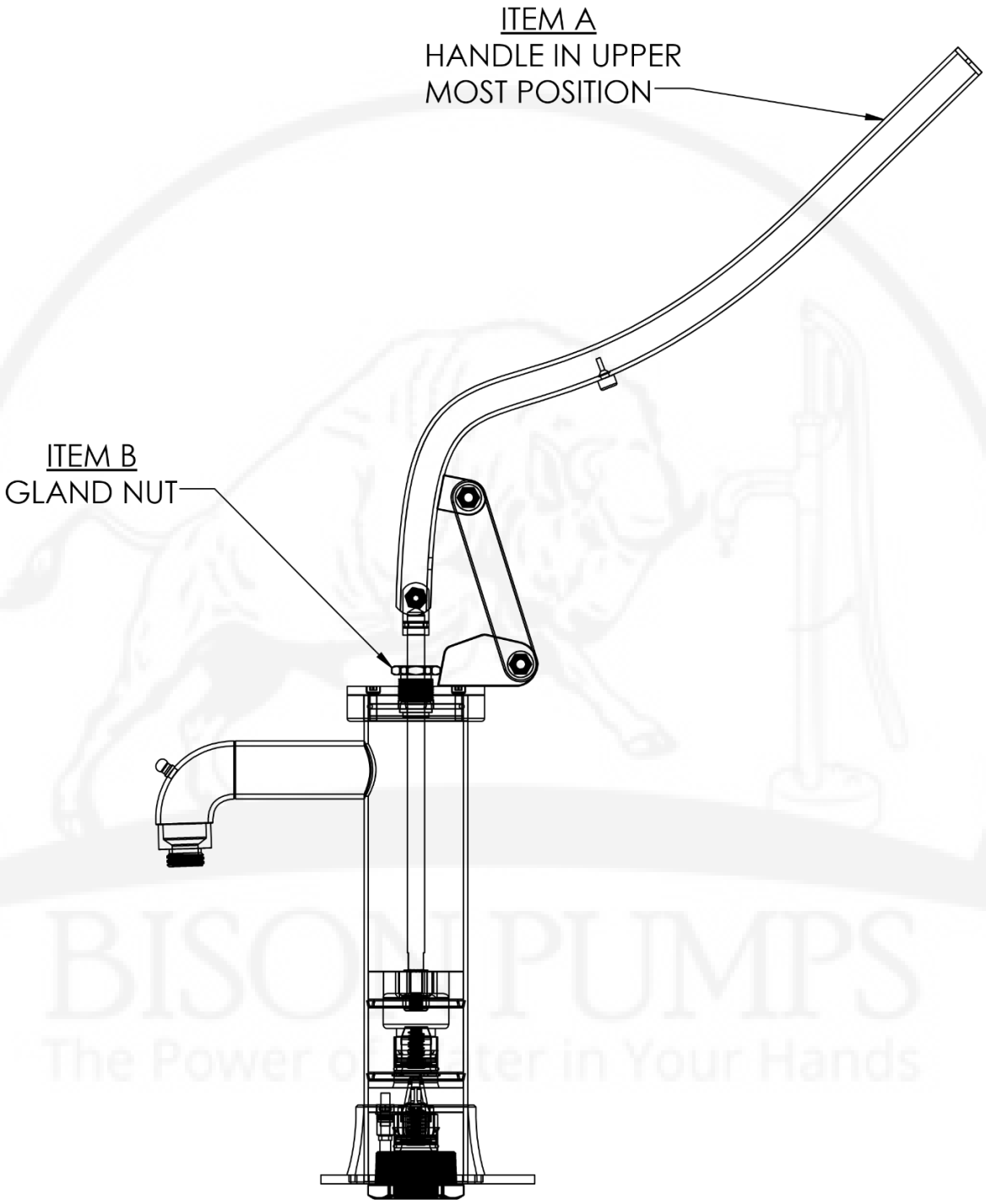
Detail E: Handle Orientation



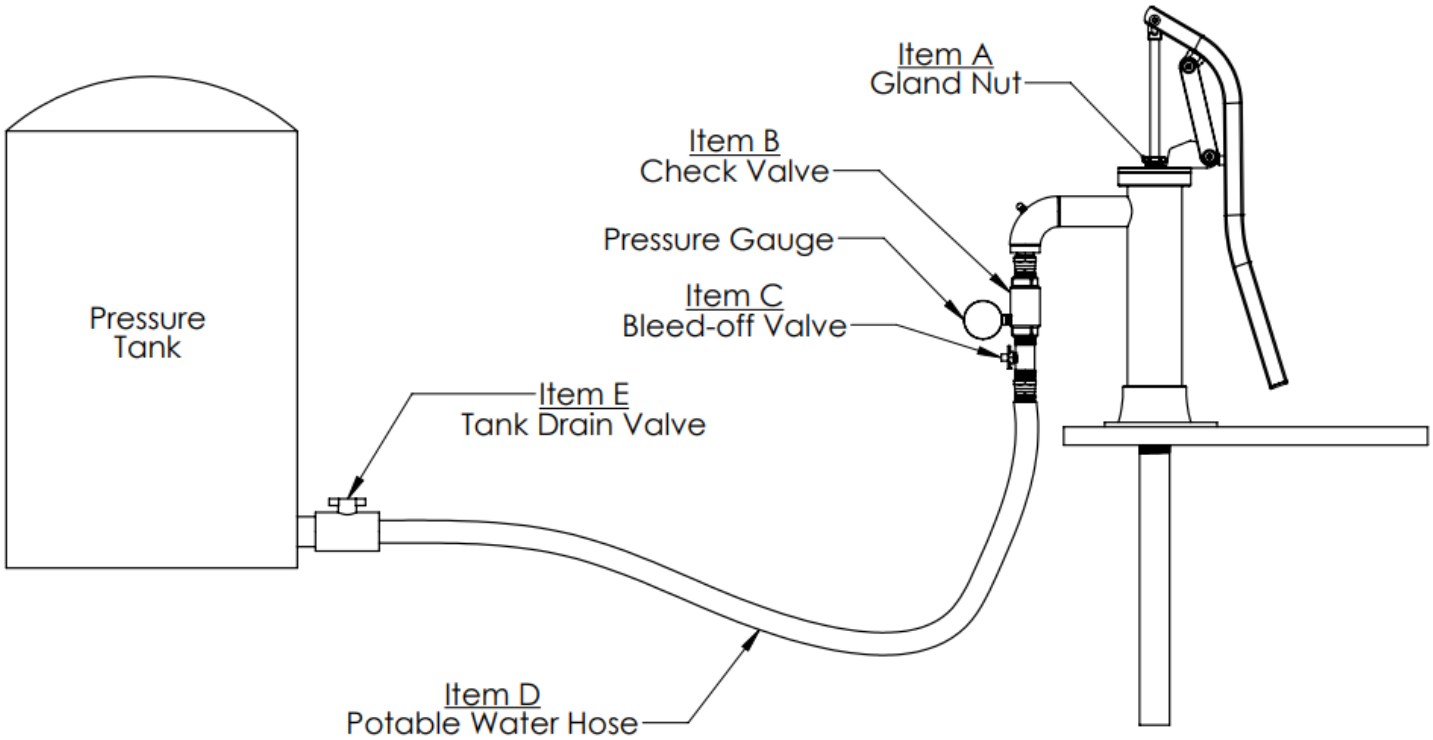
Detail F: Driven Well Point Installation



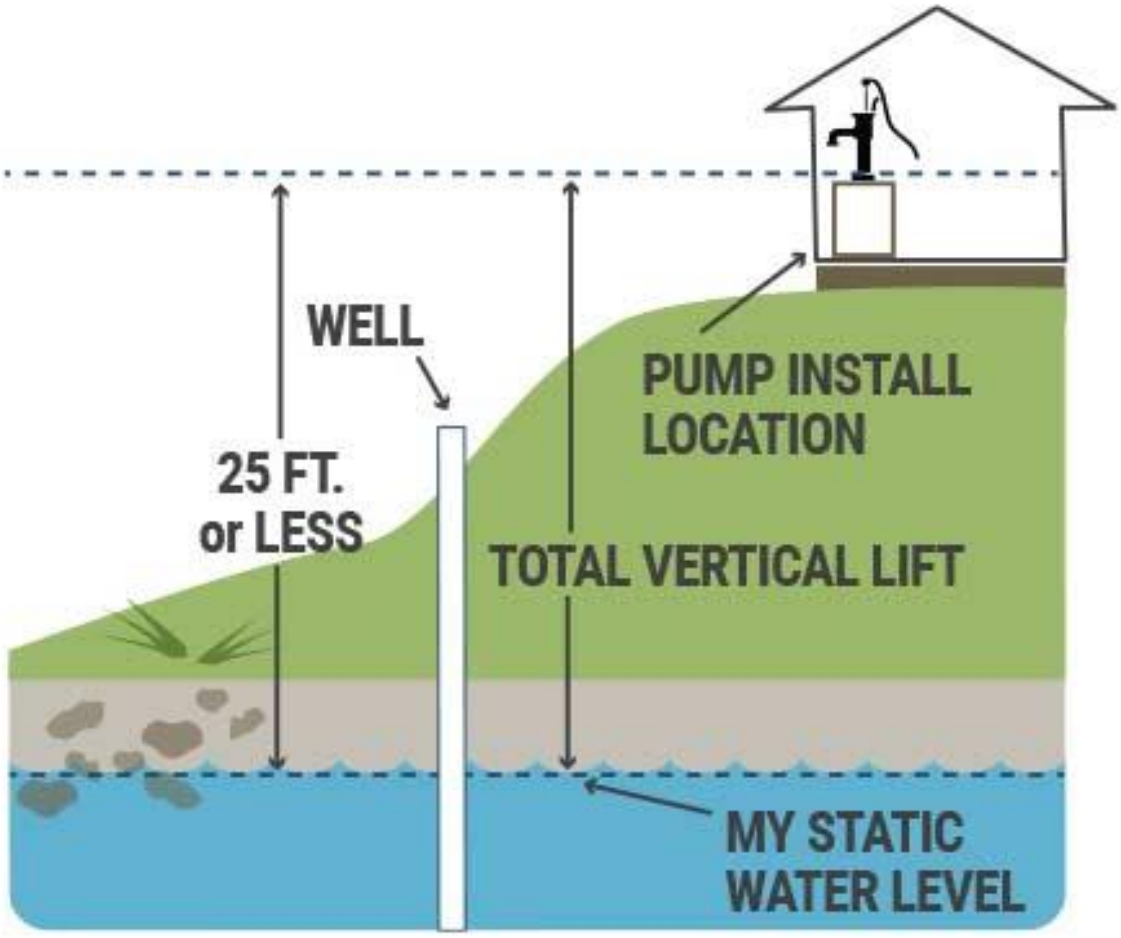
Detail G: Winterizing



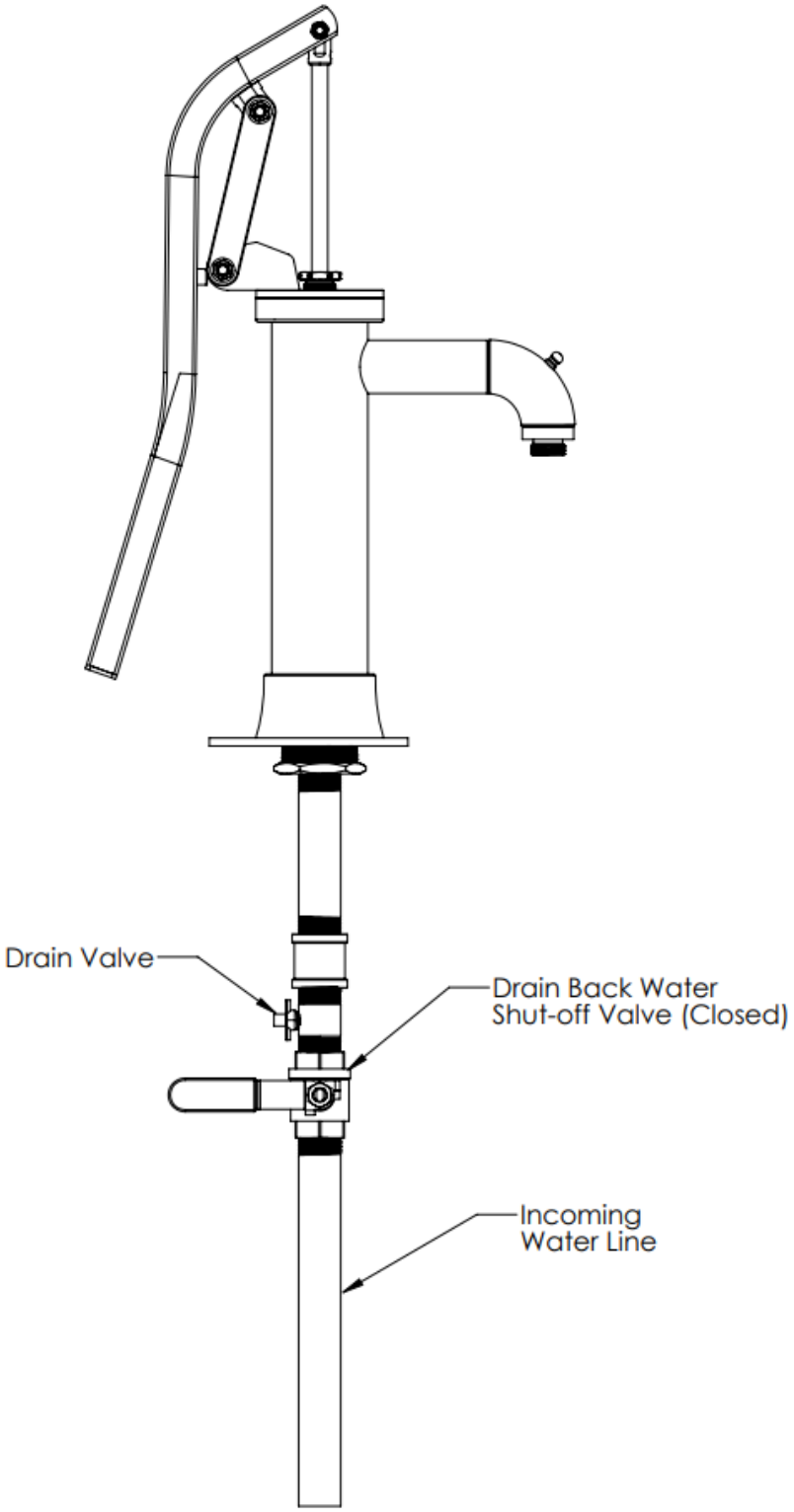
Detail H: Pressurizing a Water System



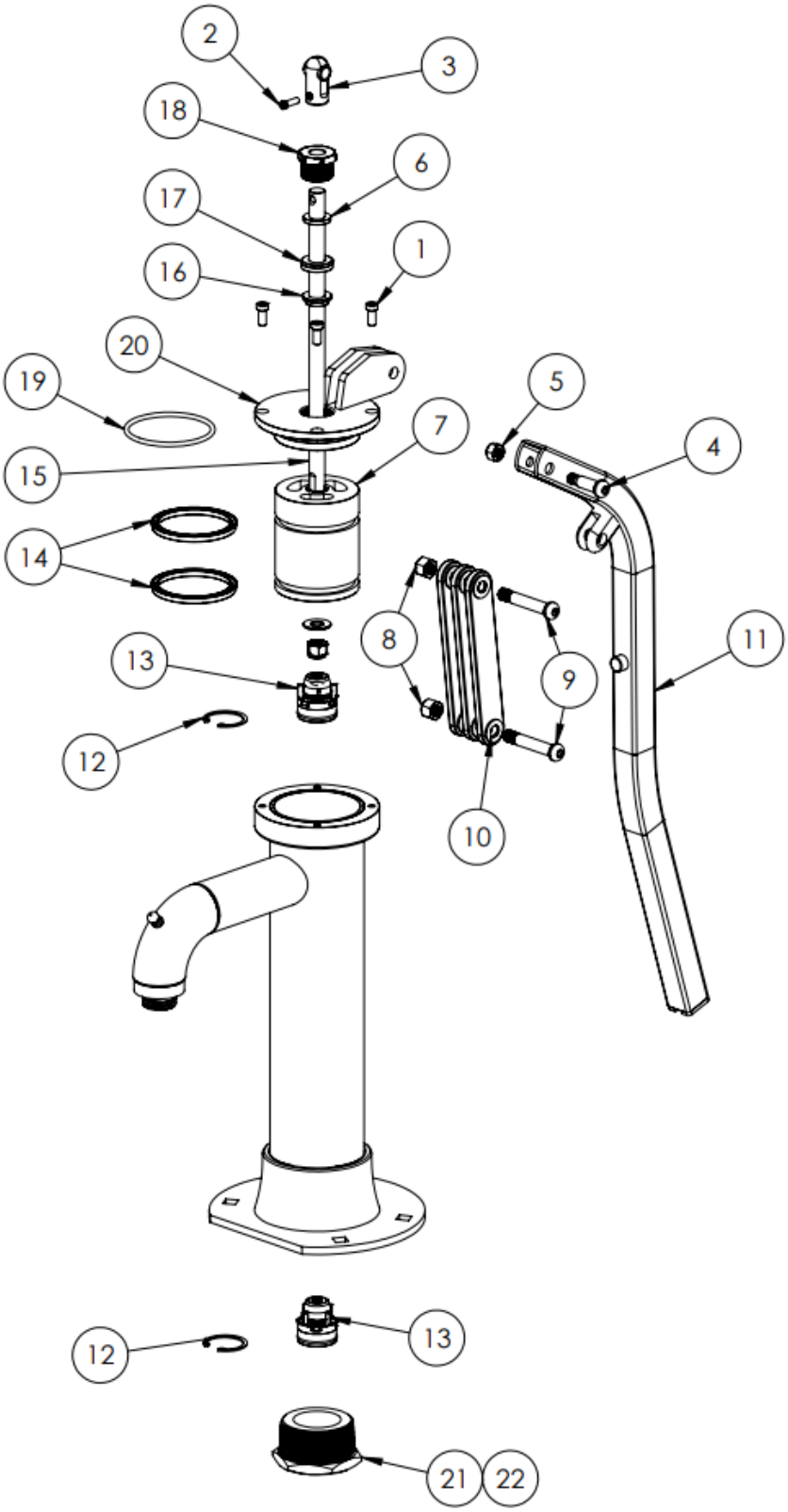
Detail I: Total Vertical Lift



Detail J: Drain Back Water Shut-off Valve and Drain Valve



Detail K: Exploded View



Detail L: Part Listing

Item No.	Part Number	Description	Quantity
1	50-001-0-08-02	Custom Low-Profile Fastener	4
2	50-001-0-04-05	Rod Connector Set Screw	1
3	50-001-0-04-04	Rod Connector	1
4	50-001-0-03-06	Handle Shoulder Bolt	1
5	04-000-1-50-19	Shoulder Bolt Ny-Loc Nut	1
6	04-000-5-40-02	Packing Gland Backing Washer	1
7	50-001-0-04-02	Piston	1
8	04-000-1-50-20	Link Ny-Loc Nut	2
9	50-001-9-03-10	Link Shoulder/Hex Bolt	2
10	04-000-5-40-01	Link Washer	12
11	50-001-0-03-01	Handle Assembly	1
12	04-022-1-68-01	Internal Snap Ring	2
13	04-000-5-75-01	Check Valve	2
14	04-002-3-71-01	Piston Cup Seal	2
15	50-001-0-04-03	Lift Rod	1
16	50-100-0-08-05	Bottom Bushing	1
17	04-001-3-71-01	Packing Gland Cup Seal	1
18	50-100-0-07-00	Gland Nut	1
19	04-139-3-70-02	Top Plate O-Ring	1
20	50-001-0-06-01	Top Plate Assembly	1
21	04-029-0-74-01	Reducer Bushing (2” to 1 ¼”) (Std.)	1
22	04-029-0-74-02	Reducer Bushing (2” to 1”) (Opt.)	1