



INSTALLATION OF THE HAND-OPERATED SIMPLE PUMP

LAST UPDATED: September 18, 2024

It is highly recommended you view the entire installation video for an overview before using these instructions. <http://www.simplepump.com/support/installation-videos/>

Read each section carefully before proceeding.

Follow instructions step by step.

CRITICAL INSTALLATION REMINDERS

1. PUT THE TOP DROP PIPE ASIDE TO BE INSTALLED LAST

The top drop pipe **MUST** be installed last. It is marked four different ways. See page 13.

2. DO NOT USE ANY KIND OF LIQUID SEALANT/PIPE DOPE

This can interfere with piston operation. See page 15.

3. DO NOT OVERTIGHTEN DROP PIPE JOINTS

This can cause binding of the lift rods interfering with pump operation. See page 15.

4. PAY CAREFUL ATTENTION TO EVERYTHING MARKED

 for Warning,  for Caution, and *** for Note.

5. IF YOU ARE A HOMEOWNER, YOU MUST HAVE A HELPER FOR ANY INSTALLATION

(The following instructions are very detailed, and should tell you everything you need to know. If you have questions, please phone 1.877.492.8711 ext. 5)

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SECTION 1: INTRODUCTION / PARTS SHIPPED / TOOLS REQUIRED

Thank you for purchasing a Simple Pump. Please carefully read through these instructions. Your time will be well spent.

You will receive your Simple Pump partially assembled. The following section lists the different types of assemblies that you will likely receive. Compare the description to the packing list included with your shipment. The following are the core components, there may be other components on your quote that are not shown here.

PUMP HEAD ASSEMBLY (PHA OR PHA-47)

Pump Head – Includes Riser Tube, Pump Head, Press-Fit Guide, and Rod Gland.



Stainless ¾" Pump Rod – Shown below with the end pulled from packaging. Actual length about the same as the Pump Head with Riser tube (shown above).



Lever Link Arm Bracket Assembly – Pre-assembled brackets and hardware ready to attach to Lever Arm and Pump Head.



Clevis, Clevis Pin, and two (2) Brass Shims – Pre-assembled onto the Lever Arm (shown on the following page).

LEVER ARM (24LA or 36LA)

24LA or 36LA – Pre-assembled with Clevis, Clevis Pin, and Brass shims (shown below).



WEL CAP (SEAL)

Simple Pump Machined Well Cap (Seal) – These are fully machined by Simple Pump and are designed for configurations where the submersible pipe exits through the top of the cap (seal), or where a pitless style cap (seal) size is not available. These come fully assembled with the split flange (see below).

2" Simple Pump Cap (Seal) or Mounting Plate – with 1-3/4" Split Flange port for the Simple Pump only with Split Flange.

4", 4.5", 5", 6-6.25", or 8" - with one or two 1" NPT access ports, 1-3/4" Split Flange port for the Simple Pump only with Split Flange, and 1-3/4" Submersible Pipe port



Simple Pump Modified Well Cap (Seal) – These are sourced by Simple Pump from Boshart, and are modified to allow for the installation of a Simple Pump and designed to be used when there is a pitless adaptor.

5", 6", or 6.25" Boshart Cap (Seal) – with 1 3/4" port for the Simple Pump and a 1" machined port for access to the well.

Split Flange – not assembled to the Boshart Cap (Seal), it will be loose in the cap (seal) box.



DROP PIPE KITS

Drop Pipe and Lift Rod – These can come in either 9', 54" or 27" lengths. Drop Pipe currently provided with stainless steel female coupler (shown at right).



Rod Guide(s) – Nylon guides used to center the Lift Rod in the Drop Pipe (shown below). There will be one Rod Guide per Drop Pipe Kit, which will typically be shipped in a separate container in one poly bag.



PUMP CYLINDER ASSEMBLY (100CA, 125CA, or 200CA)

Pump Cylinder Assembly – Includes the cylinder, bottom check valve, piston, piston rod, and required hardware. The 100CA utilizes a spring style bottom check valve and has a total length of 29" from the bottom of the check valve to the end of the piston rod. The 125CA utilizes a ball and seat style bottom check valve and has total length of 25.5" from the bottom of the check valve to the end of the piston rod. The 200CA utilizes a ball and seat style bottom check valve and has a total length of 29" from the bottom of the check valve to the end of the piston rod. NOTE: If you ordered a T-Handle Tool we might have threaded the bottom portion of it into the top of the Cylinder Assembly to protect the Piston Rod. If so, please remove this before installation.

200CA



125CA



100CA



ACCESSORIES ALSO POSSIBLY SHIPPED

Safety Tool – Keeps the pump set from falling into the well during installation.



Check Valve with Pressure Gauge – For pumping into your home's pressure tank or uphill.



Seal Kit – For first maintenance, 3-10 years after installation. SK125CA shown below.



T-Handle Assembly Tool – For assisting with Drop Pipe Kit installation, specifically for deeper sets. Comes in two pieces that can be threaded together. The bottom piece will likely be threaded to the top of your pumping cylinder



TOOLS AND MATERIALS REQUIRED

- One (1) Allen Wrench set (English, not metric; 1/4", 3/16", 5/32")
- Two (2) Channel Lock Pliers large enough to grip 1 3/4" outer diameter pipe
- Two (2) 5/16" Open-End Wrenches
- Roll of Teflon tape (Provided)
- Bleach/Water – 1-part bleach to 20 parts water in a 5-gallon bucket
- Wire cutters/strippers (if installing alongside an existing submersible pump)
- Provided: Small tube of Anti-Seize Compound/Lubricant. Apply to all threaded connections on the well cap and the connection between the SS Pump Rod and the aluminum Clevis.
- Provided: Loctite® 243™ Threadlocker Medium Strength / Oil Resistant. Apply to all Lift Rod connections including the final lift rod that connects to the Pump Rod.

SECTION 2: DO IT YOURSELF, OR CALL A PROFESSIONAL?

Determine what type of well cap (seal) is on your existing well casing, either 1 or 2 below.

1. IF THERE IS NO WATER PIPE THROUGH TOP OF THE WELL CAP (SEAL)

If your well cap (seal) does not have a pipe from the submersible passing up through the middle, you have a pitless adaptor. You can quite possibly do the installation yourself. Evaluate by watching the pump installation video at the link below: <https://www.simplepump.com/support/installation-videos/>

You should be comfortable with both simple plumbing tasks and electrical wiring. With the wiring, you will need to disconnect your existing submersible well pump wiring under the existing well cap (seal) and reconnect it through the new well cap (seal).

You **MUST BE CERTAIN** the power is disconnected while you are working. We suggest a lock out/tag out methodology to ensure someone does not reconnect inadvertently while working with the wiring. The easiest way to do this is to place a piece of tape over the breaker, once it is turned to the off position, noting "DO NOT TURN ON".

 **WARNING: ELECTRICITY IS VERY DANGEROUS, DO NOT ATTEMPT TO PERFORM THIS WORK UNLESS YOU HAVE THE APPROPRIATE TRAINING OR EXPERIENCE!!!**

*** If you have the skills required to safely disconnect and connect power to the submersible (cut, strip, and splice), the installation is really quite simple.

 **WARNING: Whatever your water level, two people should install the SimplePUMP**

 **WARNING: If the SimplePUMP set is further down than 135' (15 Drop Pipe Kits), we recommend professional installation. Each length of Drop Pipe Kits are about 5 lbs. At 135' you are handling about 75 lbs. We can't (and are not liable) for knowing what weight you and your helper will be able to handle.**

2. IF SUBMERSIBLE OUTPUT PIPE IS THROUGH TOP OF THE WELL CAP

If your well cap (seal) has a pipe that passes through the top and continues to your house system, it is best to employ a professional to at least install the SimplePUMP well cap (seal). Your pump installer has equipment to lift the existing cap (seal) with the attached string of pipes and pump, swap your current cap for the SimplePUMP cap (seal), and then place the pump set back in the casing with the new cap (seal). At that point, you could have them continue with the SimplePUMP installation, or do that yourself. Evaluate by watching the pump installation video at the link below:

<https://www.simplepump.com/support/installation-videos/>

SECTION 3: INSPECTING YOUR EXISTING SYSTEM

This section applies if you have a pitless adaptor and you can remove your current well cap(seal) by hand. You will remove your existing cap (seal), then inspect your well for any obstacles that might obstruct the installation of your new hand pump.

1. Make certain that your electric well power source has been shut off as well as locked/tagged out.
2. Remove your existing cap (seal).
3. Untangle any wiring under the cap (seal) and gently pull any excess wire from the casing until it is tight.
4. Confirm unobstructed clearance down the well. Shine a high-intensity light source down the well. Best is a mirror used to reflect the sun to shine down the casing. You can see the water reflecting as deep as 200 feet if the well is straight. If there is no submersible pipe through the cap, you will see a special fitting called a “pitless adaptor”, which takes water coming up from the submersible through an exit on the side of the casing, underground. **There must be enough clearance to allow the drop pipe for the hand pump to pass beside this fitting.** The 200CA pump cylinder requires 2.5”, the 125CA pump cylinder requires 1.8”, and the 100CA pump cylinder requires 1.6” diameter clearance. *** On some submersible pump installations, a number of “center guides” are installed at intervals to keep the submersible pipe and wiring in the center of the casing. These may prevent the hand pump piping from being installed. Most wells don’t actually have these and if desired a well company can remove the unneeded ones.
5. **Check clearance for the cap (seal) and inspect the rim of the well casing.** No matter what cap (seal) or casing type you have, the cap (seal) is designed to fit onto the casing rim snugly, inspection is important to ensure proper fit.
Side view check: The rim of the well casing should be smooth and level throughout, this allows the cap (seal) to sit flush.
Top view check: The rim’s thickness should be the same all the way around. Sometimes, if the casing was cut using a welding torch, there may be extra material on the outside that effectively thickens the rim. This needs to be removed. A sharp flat file or hand grinder can be used to remove the excess material.

FOR 2” (STEEL OR PVC) OR 4” PVC CASING

If your casing is 2”, it requires a rigid support. Otherwise, the normal forces from the lever-arm movement make a 2” casing deflect (as much as 2-3” for a metal casing or 6-7” for PVC). The best option is to not mount directly on the 2” casing at all. Use a 4-5’ section of 6” metal or PVC casing as a sleeve with the original 2” casing housed inside.

Installation: If the casing is higher than 12” above ground level, cut the 2” casing down to 12” above ground level. Dig down so the 6” sleeve is embedded several feet into the earth, with its top 2” above the top of the 2” casing.

Use the 6" well cap (seal) to help you correctly position the 6" sleeve off center of the 2" casing. Backfill around the casing. Then securely cover the top of the 2" casing before using cement to fill the space between. Use just the fine slurry of Portland cement, no aggregate. Now you can put the SimplePUMP well cap (seal) on the 6" sleeve, with the proper alignment to install the drop pipe(s) down the 2" casing.

4" PVC

A 4" PVC casing WITHOUT the stabilizing weight of a submersible hanging off the well cap, is not as strong as would be ideal. Similar reinforcement as the 2" casing is recommended if the pump is being used every day, year-round.

SECTION 4: REPLACING THE EXISTING WELL CAP (SEAL)

This section addresses well cap (seal) replacement for wells with a currently installed electric submersible pump.

 **WARNING: MAKE SURE THE ELECTRICITY TO THE SUBMERSIBLE PUMP HAS BEEN TURNED OFF, LOCKED OUT, AND TAGGED OUT.**

 **WARNING: YOU MUST HAVE YOUR NEW SIMPLEPUMP WELL CAP INSTALLED BEFORE PROCEEDING WITH THE INSTALLATION OF THE PUMP.**

FOR A PITLESS WELL CAP (SEAL)

Most pitless well caps (seals) can be swapped out by a homeowner. If you have any doubt, please send us a photo.

1. When you untangled the pump wiring during the inspection explained in the previous section, you should have found connections. Typically, these are wire nuts under electrical tape. They may be crimped connectors; in which case you will need to cut the wires close to the connectors. You will usually have a "three wire" connection, which means three wires and a fourth that is ground. Note the colors and disconnect them. As an additional safety precaution, if you have a metal casing, take the bare wire ends coming from the house and touch them to the well casing one at a time as you disconnect them. If for some reason there was power, they would arc against the casing, and not you. The wires must be reconnected in the same order. You may need to tie some twine onto the pump wires to keep them from falling down into the well. The wires should be taped to the piping a few feet down.
2. If using a **Simple Pump machined well cap (seal)**, take the wiring from inside the casing and pass it through the 1" or ¾" port and slide the well cap (seal) over the casing, level if necessary and tighten the four outer set screws. If using a **Simple Pump modified (Boshart) well cap (seal)**, take the section of wiring coming from outside the casing and pass it through the bottom section of the well cap (seal). Next, slide the well cap (seal) over the casing, level if necessary and tighten the one outer set screw.

3. You will need to carefully evaluate your wiring to determine the best method to enclose the wiring. Sometimes flexible conduit is the easiest method. Whatever method you use to finish off the electrical conduit, make certain that each wire is reconnected to the same wire.
4. Make certain that the wiring inside the casing does not obstruct the path for the hand pump piping as you look down through the split flange. The power cables and submersible's safety lifting cable should be taped to the submersible pump's pipe, straight up from the bottom to the top. Neither should spiral around the pipe; they should be as flat against the pipe as possible. If this is not the case, you should seek the help of a professional installer.
5. **ONLY FOLLOW THIS NEXT STEP IF YOU HAVE THE 200CA CYLINDER ASSEMBLY, OTHERWISE PROCEED TO STEP 6.** If you have the 200CA you will need to secure the cylinder assembly to the well cap (seal) before installing it on the casing. The outer diameter is too big to fit through the Simple Pump port so it must be secured from below the well cap. Before proceeding clean the cylinder assembly as instructed in Section 5. Take the 200CA and from the underside of the well cap (seal), push the section at the top of the cylinder assembly with the 1 3/4" tubing through the Simple Pump port and split flange as far as possible.

Making sure the three bolts on the top of the split flange are loose, fully tighten the pinch bolt on the side of the split flange. Shown below.



***** As you introduce the cylinder past the split flange, you may find it difficult to move the leading edge past the O-ring in the split flange. You might have to use some Vaseline, or other lubricant, to get the leading edge of the cylinder past that O-ring.**

***** From this point DO NOT loosen the pinch bolt until you have secured the first drop pipe to the top of the cylinder and are proceeding with the drop pipe installation as shown in Section 5.**

6. Place the top section of the well cap (seal) on the top of the well casing. Secure the top section to the bottom section using the provided bolts. Tighten the set screw on the side of the Boshart cap, then in a cross pattern fully tighten the bolts. **NOTE: DO NOT OVERTIGHTEN THE SET SCREW OR IT CAN BREAK THE CAP, OVERTIGHTENING WILL INVALIDATE THE CAP WARRANTY.**
7. Once your existing wiring is reconnected and the cap is securely installed, you can energize your electric pump and make sure that it is working normally before you proceed.

FOR THE SIMPLE PUMP MACHINED WELL CAP (SEAL)

If you have a submersible pipe coming UP THROUGH the well cap (seal), our machined well cap will be used and the installation should be done by a professional. If you are working with our machined well cap (seal), please see notes below.

ONLY FOLLOW THIS NEXT STEP IF YOU HAVE THE 200CA CYLINDER ASSEMBLY. If you have the 200CA you will need to secure the cylinder assembly to the well cap (seal) before installing it on the casing. The outer diameter is too big to fit through the Simple Pump port so it must be secured from below the well cap. Before proceeding clean the cylinder assembly as instructed in Section 5. Take the 200CA and from the underside of the well cap (seal), push the section at the top of the cylinder assembly with the 1 3/4" tubing through the Simple Pump port and split flange as far as possible. Making sure the three bolts on the top of the split flange are loose, fully tighten the pinch bolt on the side of the split flange. Shown below.



*** As you introduce the cylinder past the split flange, you may find it difficult to move the leading edge past the O-ring in the split flange. You might have to use some Vaseline, or other lubricant, to get the leading edge of the cylinder past that O-ring.

*** From this point DO NOT loosen the pinch bolt until you have secured the first drop pipe to the top of the cylinder and are proceeding with the drop pipe installation as shown in Section 5.

*** The submersible port is 1.7". If you have a 1" nominal submersible discharge, the plug can be cut with a 1-3/8" hole saw, turning it into a bushing.

*** Dissimilar metals corrosion is possible, as one might see with an aluminum engine block, with special hardened-steel head bolts. To prevent this, use Permatex Anti-Seize Compound/Lubricant on all threaded connections where a stainless-steel fastener is threaded into aluminum threads.

SECTION 5: PUMP CYLINDER AND DROP PIPE KIT INSTALLATION

INTRODUCTION

In this section we will review the installation of the entire string of new drop pipe with the pump cylinder at the bottom.

💧 **Be very cautious, it is possible to drop the pipes down the well!**

💧 **Follow these directions carefully, step by step!**

PREPARATION AND INSPECTION

The drop pipe kits arrive in a spiral-wound fiber tube that is the length of the drop pipes (9', 54", or 27"). The male threaded ends could be protected by a plastic cap. You need to remove the cap(s) prior to installation. Inspect the male threaded ends to make sure they were not damaged or cracked during shipment.

💧 **Be sure to identify the top drop pipe, and put it aside to be installed last!**

A 1/16" weep hole is drilled 48" down from the stainless-steel coupler (or further down if a custom weep hole was requested). The top drop pipe is marked in FOUR WAYS:

1. The words TOP DROP PIPE are in red.
2. The steel coupler has a red marking on the end surface (shown below).
3. The cap on the opposite end of the pipe has a red "W" on it.
4. The weep hole has a red circle around it and the words "WEEP HOLE" written beside it (shown below).



Each lift rod is shipped inside of a drop pipe. The ends of the spiral-wound fiber tubes have cardboard caps and are wrapped with stretch wrap and tape. We do our best to securely pack these systems, but at times we have seen them be mishandled by the shipping company. Therefore, before installation, examine the length of each lift rod very closely. The surface should be unbroken and not splintered.

*** CLEANING PARTS

Using a dilute (20:1) bleach solution clean the inside and outside of all pipe and rods, the inside and outside of the pump cylinder assembly, the inside of the pump head assembly, and the pump rod.

Take care to remove any remaining solution, debris, dirt, etc. Place them where they will not be contaminated prior to installation.

INSTALLATION PREPARATION

LIFT ROD

If using the 200CA you will follow this step at the well head as the piston rod will be coming out of the top of the cylinder assembly, which is attached to the well cap (seal). Otherwise take the pump cylinder, and using the vice grips, connect the male threads on the piston rod to the female threads on the lift rod. There will be no flat on the piston rod so use the channel lock pliers on this piece, using the 5/16" wrench on the lift rod. Tolerance can vary slightly and they MAY NOT meet shoulder to shoulder. It is ok if they do not meet shoulder to shoulder. Tighten firmly, but do not over tighten as it is possible to damage the piston rod.



*** SPECIAL NOTE

The female lift rod end has a dimple in the skirt that acts as a mechanical lock by disrupting the threads. To further lock the threads, use a dab of the provided **Loctite non-permanent thread bonder** on the male/female lift rod connections.

🔥 DO NOT use the crimp in the stainless-steel rod end as a flat for tightening!

In October of 2020 we added flats to the stainless-steel rod ends. These require 5/16" wrenches. Make sure to use the flats and not the crimp to tighten the rod ends. If you use the crimp, it is possible that you can disrupt the bond between the rod and the stainless-steel rod end.

🔥 DO NOT place the lift rods in direct sun before or during installation!

This can dramatically increase the temperature of the stainless-steel rod ends and fiberglass rods. Immediate immersion in cool well water can then shock the epoxy bond between rod ends and fiberglass rods, which may result in epoxy bond failure resulting in the end being pulled off the rod.

***** In normal usage, this bond is enormously stronger than needed for operation of the pump from the deepest set advertised**

DROP PIPE

There are three (3) possible types of drop pipes based on the age of your system, shown here:

- with stainless-steel coupler, CURRENTLY PROVIDED CONFIGURATION (below left)
- with a bell-end joint (below right)
- with a PVC coupler (below right)

*** The instructions following show photos using the bell-end version. The instructions are the exact same for the other two types of female ends.



💣 **WARNING: NEVER use liquid sealant/pipe dope.**

💣 **WARNING: If using the provided Teflon tape, do not use more than five (5) layers.**



Take the first drop pipe and apply three wraps of provided Teflon tape on the male threads. **Mark the thread at 5/8" from the cut end of the pipe. This needs to be the maximum engagement point.**

Bring the lift rod that is already attached to the piston rod into the male end of the drop pipe. Thread the drop pipe into the pump cylinder being careful not to cross thread. Tighten by hand first with moderate force.

Further tighten the drop pipe into the body of the pump cylinder, while holding the pump cylinder with a channel lock **for a final maximum engagement of 5/8"**. **Note: If using the 200CA it will be secured by the split flange on the well cap (seal) so perform this step there.**

💣 **WARNING: The amount of torque desired is ONLY about a half-turn beyond hand tight. The drop pipe threads are tapered, so there is no need to use a large pipe wrench or any other tool that generates a great deal of torque. DO NOT EXCEED the maximum of 5/8" engagement.**

This limit is the same for each drop pipe added. Further engagement could possibly bind the rod guides against the lift rod impacting pump operation. If this 5/8" measurement is followed carefully and the

drop pipes are tightened as directed, the final relationship should be good. If not ideal, an adjustment can be made later, after adding the top drop pipe.

INSERT CYLINDER AND DROP PIPE (100CA and 125CA)

If using the 100CA or 125CA you should have a 10.5' long (if using 9' drop pipe) assembly that includes the bottommost drop pipe, and the ~18" long pump cylinder.

***** The three (3) bolts on the top of the split flange** should be slightly loose (horizontal arrows, shown right), and the **pinch bolt should be loose** (vertical arrow, shown right). Have your safety tool handy, **and another person to help**.

Then, introduce the pump cylinder past the split flange that is mounted to the well cap (seal).

***** As you introduce the cylinder past the split flange, you may find it difficult to move the leading edge past the O-ring in the split flange. You might have to use some Vaseline, or other lubricant, to get the leading edge of the cylinder past that O-ring.**



INSERT DROP PIPE (200CA)

If using the 200CA the first drop pipe kit should be securely threaded to the pump cylinder assembly. Loosen the pinch bolt on the spit flange and start introducing the first drop pipe into the well casing.

The safety tool is then placed on the three bolt heads that mount the split flange on the well cap (seal) (right).



Bring the end (female coupler or bell end) of the pipe down to rest on the safety tool (below). The safety tool will hold the entire set as it is assembled, keeping it from dropping into the well.



Place a rod guide over the protruding lift rod (below). It will shimmy down into the female end, to the point where it is below the threading.



When the lift rod is pushed down as far as it will go, there are 5.5-7.5" of lift rod protruding (left).

As we continue to add all the lengths of lift rod and drop pipe, the goal is to maintain 4-6" distance between the top of the lift rod and the top of the drop pipe coupler.

To get this result, try to have about 5/8" thread engagement between the female and male pipe ends. To achieve this, screw the two ends until hand tight. Then using two channel locks, screw about 1/2 rotation further.

If the pipe is not tight, you can tighten another 1/4 to 1/2 turn, but no more. If you tighten further the rod guide will become pinched and potentially bind against the lift rod.



Attach the second lift rod to the lift rod just installed (left).



Use your vice grips/channel locks/wrenches to tighten the rod ends (below). Typically, they will come shoulder to shoulder with no gap.

⚠️ **WARNING:** It is possible that it feels like you cannot tighten it any further and they have not come shoulder to shoulder, this is ok. BE CAREFUL NOT TO OVER TIGHTEN AS IT CAN BREAK THE ROD END.



Install the second drop pipe. As before, apply three (3) wraps of Teflon tape on the male threads. Then, arch the lift rod so that its end is inserted into the male end of the drop pipe (below).



Screw the drop pipe ends together, 5/8" of engagement, or a half-rotation beyond hand-tight (below). After connection to the drop pipe, lift up the drop pipe and remove the safety tool. Lower the drop pipe a few inches, where the coupler or bell end is below the split flange, and replace the safety tool around the next drop pipe. Carefully lower the drop pipe until the next coupler or bell end is resting on the safety tool.



You have installed the first two drop pipe kits!

If you have less than eight (8) drop pipe kits, go straight to the "TESTING FOR WATER" portion below.

OPTIONAL: SECTION FOR EIGHT (8) OR MORE 9' DROP PIPE KITS

Simple Pump recommends the T-Handle Assist Tool be used when the installation requires 8 or more 9' drop pipe kits.

Also, this tool should be used if the person doing the installation has concerns about being able to hold onto the weight of a lesser number of drop pipe kits.

HOW TO USE

The downward-facing 1" male thread on the T-Handle are threaded into the female end on the drop pipe.

The T-Handle provides a safe grip area for the lowering of the drop pipe string when the female end is at about eye level down to the point where the coupler or bell end is cradled on the safety tool (right).

Once the string of drop pipe is safely resting in the safety tool, the T-Handle can be unthreaded and reattached to the next drop pipe.



CONTINUE WITH THE ADDITION OF ALL THE DROP PIPE KITS

*** Make sure to end with the TOP drop pipe kit

TESTING FOR WATER

Calculate how many lengths are needed to reach your static water level. To test if the cylinder is in water, lift up and down on the protruding lift rod. When the effort needed increases noticeably with each stroke, you are now in water.

*** Only lift the lift rod up about 6" on each stroke (right).

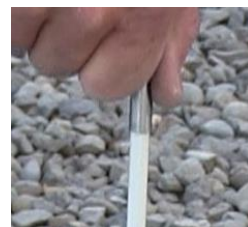
CAUTION: PREVENT VAPOR LOCK

Occasionally, there can be a small glitch at this point, what we call a "vapor lock" condition. If you now introduce drop pipe kits with the lift rod in the DOWN position, hydrostatic pressure can push the ball against the bottom of the piston. The pump will not work properly until the 3/4" stainless-steel ball falls from the bottom of the piston.

To prevent this condition, make sure the lift rod is SLIGHTLY LIFTED as the pump cylinder enters the water.

CAUTION: MAKE REALLY SURE YOU ARE IN THE WATER

Before proceeding with the next section, 'PUMP HEAD INSTALLATION', confirm that the pump cylinder is definitely in water. Pumping air for any appreciable length of time can damage the seals and maybe even the inside of the pump cylinder. This damage would not be covered under warranty.



SECTION 6: PUMP HEAD INSTALLATION

PREPARATION: CHECK FOR POSSIBLE LIFT ROD ADJUSTMENT

When you have installed all the lift rods and their drop pipes, the lift rod should extend up out of the top drop pipe. You may or may not have to make an adjustment, depending on the number of inches of protrusion.

 **CAUTION: 5" OF LIFT ROD PROTRUSION IS IDEAL, HOWEVER A FIGURE BETWEEN 4" AND 6" IS ACCEPTABLE.**

IF LESS THAN 4" OF LIFT ROD PROTRUSION

This requires the use of the 5684RE 1.25" stainless-steel rod extender(s). One rod extender is provided with every 8 drop pipe purchased. If more are required, please contact us to order. Use the appropriate number of rod extenders to get as close as possible to the ideal 5" of protrusion. Again, as long as the protrusion is between 4" and 6", it is acceptable. Like the female lift rod end, the female end of the rod extender has a dimple in the skirt that acts as a mechanical lock by disrupting the threads. To further lock the threads, use a dab of **Loctite non-permanent thread bond** on the male/female rod extender connections. You can use either type of Loctite that meet the standards for drinking water as noted in Section 1: Tools and Materials Required.

IF GREATER THAN 6" OF LIFT ROD PROTRUSION

This requires the use of a longer stainless nipple between the 109DPTSS-XX (top drop pipe) and the bottom end of the riser tube.

In the very unlikely event that you have this situation, you'll have to obtain an adjustment nipple either from us, or a local supply company. It needs to be stainless-steel with 1" NPT male threads on each side.

WHY AN ADJUSTMENT MAY OR MAY NOT BE NEEDED

As with any manufacturing process done by human beings and not computers, there will be a small tolerance allowed on the length of both the lift rods and the drop pipe.

Ideally, we want 5" of lift rod protruding from each female (coupler or bell) end, as you proceed through the installation. With this ideal 5" protrusion, the 10" pump stroke will be centered in the available 14" of pump cylinder length, and the lever arm stroke will be limited by the contact between the lever link arm and lever arm at the top and bottom of the lever arm travel. The piston in the pump cylinder at the bottom will never touch the bottom or the top of the cylinder.

If the male threads are cut deeper than the ideal (not likely), then the male threaded end will thread into the female end further than the desired 5/8" of engagement, and the effective length of drop pipe will be short requiring an adjustment nipple.

Different individuals may interpret the installation instructions differently, resulting in a slight difference in how far the drop pipe is threaded together. The greater the number of lengths of lift rod and drop pipe, the more possible it is that these slight variations may add up to requiring an adjustment.

INSTALLATION OF THE RISER TUBE

Install the 1" stainless-steel threaded connector (close nipple) on the female (coupler or bell end) of the last drop pipe, hand tighten. Make sure to apply three wraps of Teflon tape to the thread of the 1" close nipple before threading into the top drop pipe.



Grab the 3/4" stainless-steel pump rod, and thread it onto the upward facing male end of the top lift rod (or rod extender if used). Grip the lift rod (or rod extender if used) as shown (below left). There are flats at the top of the pump rod that you can use to get a grip on the pump rod.

Bring the riser tube (and attached pump head) over the pump rod and lower it down (below middle). Do so slowly, there is a press fit guide in the riser tube 6.5" from the pump head and a rod gland in the top of the pump head that the pump rod needs to go through. Make sure as you lower it, to align the riser tube so the pump rod is in the very middle, this will allow the pump rod to be moved through the openings.

Apply three wraps of Teflon tape to the thread of the 1" close nipple threaded into the top drop pipe

Hand tighten the riser tube onto the close nipple. Then using two channel locks, tighten a half-turn past hand tight (not shown).

At this point, the pump set is heaviest so a second pair of hands will help here.

Remove the safety tool, lifting up a little on the riser tube (below right). Lower the pump set until the riser tube is at the desired position. *** Half of the pump head assembly must be BELOW the well cap (seal). This means that with a PHA2, you must have 12" or less of the riser tube exposed, with a PHA47 you must have 24" or less exposed. It is ok to have less than half exposed, but not more than half.

***** Tighten the pinch bolt on the split flange.**

Use an "L" Allen wrench that will allow you to apply a serious amount of torque.

***** Tighten the three mounting bolts on the split flange AFTER the pinch bolt.**

Using the reverse torquing sequence, may cause the pump head to drop slowly in very deep sets where there is a lot of weight involved.



ATTACH THE LEVER ARM TO ITS BRACKET

The 24" or 36" lever arms are supplied partially pre-assembled. We assemble the clevis to the lever arm ordered, using two brass shims, and the clevis pin. We also assemble the lever bracket to the lever link arm using two brass shims, and the clevis pin. This is called the Lever Link Arm Bracket Assembly.

Put these two assemblies together before attempting to attach them to the pump head, placing them on a flat surface will make this step easier.

Introduce the first shim between the two mating parts (right). Use a small screwdriver, or Allen wrench, to reach inside, centering the shim (below right). Then push the clevis pin through partway (below).



Flip the partially connected assemblies over, gently push back the pin out just a bit (not shown). This will give you the clearance to install the second brass shim. As with the first side, use a small screwdriver or Allen wrench to center the shim.

Then, press down **on the assembly** (not the clevis pin) so the surface you are on pushes the head of the clevis pin all the way through, upward toward you (not shown).

ATTACH THE HANDLE ASSEMBLY TO THE PUMP HEAD

Bring the clevis into position above the 3/4" stainless-steel pump rod. You will be threading stainless-steel into aluminum.

Dissimilar metals corrosion is possible, as one might see with an aluminum engine block, with special hardened-steel head bolts. To prevent this, use Permatex Anti-Seize Compound/Lubricant on all threaded connections where a stainless-steel fastener is threaded into aluminum threads.

Thread into position (right).

⚠ CAUTION: THE THREADS ARE LEFT-HAND THREADS. TIGHTEN BY GOING COUNTERCLOCKWISE, NOT CLOCKWISE.

The lever bracket is brought into position (below). You should have to lift up on the pump rod in order to get the holes to align correctly (below).

⚠ CAUTION: IF YOU DO NOT NEED TO LIFT UP ON THE PUMP ROD, THEN THE LIFT ROD PROTRUSION IS OVER 6", AND MUST BE ADJUSTED PRIOR TO NORMAL PUMP OPERATION OR DAMAGE TO THE PISTON CAN OCCUR.

There are four long cap screws that need to be secured using an Allen wrench.



SECTION 7: PUMPING WATER

The lever arm stroke should be limited by the contact between the lever link arm and lever arm at the top and bottom of the lever arm travel.

When the lever arm black handle grip is pointing to the sky, contact between the lever link arm and lever arm, will be in the scalloped area of the lever arm towards the pump head in front of the link arm pin (right).

When the lever arm black handle grip is pointing to the ground, contact between the lever link arm and lever arm, will be in the scalloped area of the lever arm towards the black handle grip in back of the link arm pin.

It will require about one full stroke for each ten inches of water depth to get the water up to the pump head. For example: 100 feet will require about 120 full strokes. There is a 1/16" weep hole about 4' below the base of the riser tube. This allows water to drain out of the pump head and protects against freezing.

Each time you go out to pump after a period of time, it will require about 7-10 strokes to get the water back to the pump head. The check valves in the pump cylinder allow a very small amount of leakage over time. Over several days or weeks, you may need to pump a few extra strokes to get the water back to the top.



PUMPING INTO PRESSURE

To pump to your home's pressure tank, uphill, or very long distance in a hose you will need to install the check valve (below). We recommend pumping your pressure tank to about 45 psi, do not exceed 50 psi as it could damage your pressure tank. Use the provided gauge to monitor the pressure levels.

GETTING THE DIRECTION RIGHT

The check valve body has an arrow showing the direction of water flow. This should always be pointing away from the pump head.

You can also determine which direction is correct by looking in the end. One opening has the spring valve assembly JUST inside the end. That is the end that goes onto the pump.

The small stopper goes in the port nearest to the pump. The pressure gauge goes in the port furthest from the pump.



You may want to purge the air in the connecting hose or pipe, before the water reaches your pressure tank. Air will not cause any harm to your tank. It will just cause some spluttering at your taps, when the

water in the tank gets low. You can pump with the house end of the hose/pipe disconnected until water starts to flow, then connect.

To have water to your pressure tank AND at the pump you can install a ball-valve “Y” hose adaptor at the pump head. One branch goes to your pressure tank, the other opens right at the pump head.

SECTION 8: ADDITIONAL IMPORTANT INFORMATION

CAUTION: USING THE SIMPLE PUMP IN FREEZING WEATHER

A small weep hole in our drop pipe lets water drain out of the pump head to below the freezing level. The critical factor is that air must be able to get into the pump to allow the water to drain out.

- If you are pumping out of the standard nozzle and nothing is attached, air can get in.
- With the check valve in place, the 1/4" bleeder port on the check valve will need to be opened to let air in, thus allowing the weep hole to function. Another option is to disconnect the check valve from the pump head entirely. Any hose will still need to be disconnected and drained.

OCCASIONAL PUMPING

If your water has a high suspended solids content or high minerals content, deposits could accumulate on parts. Work the pump every week or two for a few minutes to prevent deposits from forming. We suggest using the pump every week or two regardless of content to keep the seals soft.

NORMAL POSITION OF THE PUMP HANDLE

The normal at-rest position of pump handle is vertical, with the black handle pointing to the sky. The handles vertical resting position keeps the pump rod inside the rod gland. This protects the rod from sources of contamination. DO NOT tie the handle in the down position.

IF AWAY FROM THE PUMP: REMOVE THE HANDLE FOR SECURITY

In some circumstances, you may wish to remove the handle and take it with you, reinstalling for each use. This is a simple procedure that just takes a few minutes. **Please keep in mind that the threads on the 3/4" stainless pump rod and clevis are left-hand.**

FOR THE REGULAR 24" AND 36" HANDLES (24LA AND 36LA)

Do not remove any of the three clevis pins, leave the complete lever arm linkage in one connected assembly. Remove the four 1/4-20 x 1/2" hex head cap screws where the lever bracket is attached to the flat, machined face on the pump head.

Then use the lever arm (with lever link arm and lever bracket still connected) as a wrench handle to unscrew the clevis from the 3/4" stainless-steel pump rod in the pump head. You may need to use a crescent wrench to hold the 3/4" stainless-steel pump rod, to prevent it from rotating while disconnecting the clevis.

FOR THE HEAVY-DUTY HANDLE (36LAHD)

The heavy-duty handle has three clevis pins, one at each pivot point. The design of the pivot pins is such that clips are used to lock the pin in place through the lever arm.

When it comes to the removal of the pins, simply remove the clips and remove the pins.

APPENDIX: EXPLODED PUMP SYSTEM DIAGRAM

