Installation & Operation Instructions

QUICK START

1. Carefully remove the fully assembled pump from the box and uncoil it on the ground.
2. Lower the pump into the well, below the waterline, but several feet up from the silty bottom.
3. Attach the filler hose to the collapsable water container and open the spigot.
4. Grip the foam handle in one hand while stroking the aluminum handle with the other.
5. Take a long drink of cool, clear, naturally filtered water.

Congratulations! You now own the EarthStraw Deep Blue™ hand-well-pump system. This unique and versatile pump system is designed for rapid deployment and may be stored safely for years between use. The narrow, flexible design allows it to fit into almost any well with at least a small 5/8" access point. No need to remove the existing electric pump. If the well doesn't have an access point, we make accessories that will help you create one. If your Deep Blue™ system is too long for the well, we provide a length adjustments kit for shortening the system. Or, if you cannot shorten the system, or prefer to keep the length intact, Deep Blue™ may be partially inserted into the well to reach water. Simply stretch the remaining length over the ground and "side stroke" the system horizontally. While this pumping position is somewhat awkward, it's a good temporary solution in an emergency. A much better option is to prepare your well in advance by pre-installing either the top or a side mount bracket kit. These affordable and easy-to-install accessories are available online. Installing the appropriate bracket will prepare you to quickly insert your Deep Blue™ when needed, and then remove and store it for future use

Installation

The system comes to you completely assembled. You will simply uncoil the pump and lay it out across the ground, preferably in the sunshine, allowing the coils to relax in a straighter line for easy installation.

Optional mounting brackets come with a gripper nut on the top of the bracket. Turn the nut counterclockwise to open up the access hole. Insert the pump assembly through the center of the gripper nut and lower it carefully into the well. Do not force it. If you encounter obstructions simply lift the pump and rotate to find an alternate path with no resistance.

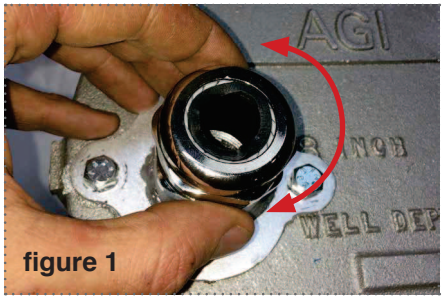


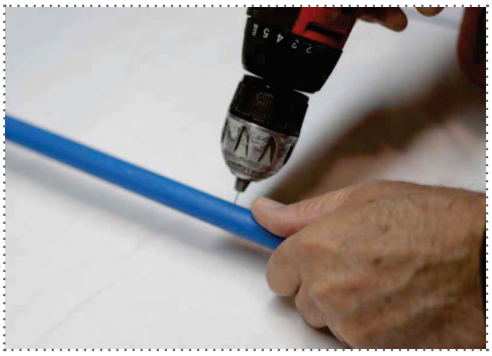
figure 1

Once the pump is fully inserted, position it to a comfortable pumping height, twist the gripper nut in a clockwise direction to lock the pump in position. When completely installed with the handle in the down position, the handle should be about 12 inches below your waistline for comfort. You may use a wrench to cinch the gripper nut tight, being careful not to over tighten. If your pump tends to slip during operation wrap two or three full turns of duct tape around the blue (or red) pump body at the gripper nut location. Now tighten the gripper nut over the taped area. This will provide a better gripping surface for the nut.

Deep Blue is a “double-pumper” system meaning that water is produced on both the up and down strokes. The system comes equipped with a 4 foot filler hose. The filler hose may be used to fill any container, or may be attached to the “collapsed” 5 liter water carrier included in your pump kit. Be sure to open the valve on the water carrier prior to pumping. As the system is pumped, your collapsed water carrier will expand and fill. Fill to within 2 inches of the top. Overfilling will cause the container to leak.

Note

- Deep Blue™ is a self-priming pump system.
- It is not designed to pressurize a home plumbing system.
- In extreme cold conditions it is recommended that you remove the system after pumping and store it in a space which will remain above freezing. If you must leave the system in the well after pumping in freezing conditions, a “weep-down” hole must be added. This is easily accomplished by penetrating the blue (or red) sidewall of your pump body 6 feet below ground level, using a very small diameter wire (like a paper clip). You can put a small straight section of the wire in your drill like a tiny drill bit, or heat it and melt through the side wall. This will cause a small amount of water loss while stroking, but will allow the above ground water to leak down to the weep hole level, reducing the chances of freezing.



- The Deep Blue™ hand well pump system has been tested in extreme conditions over hundreds of thousands of strokes. The simple design makes it very reliable. However if you would like a field service kit (DBSK-001) containing several replaceable parts, it is available on our website.
- Deep Blue™ comes with a one-year replacement-parts warranty, from date of purchase.
- Deep Blue™ is designed to lift water 200 feet from static. Do not attempt to pump water more than 200 feet from your static water level. This will void the warranty on your system.

Thanks for choosing EarthStraw,America’s Hand Well Pump.
And thank you for being prepared!

Product Construction Deep Blue™ is a Rapid-Deployment, Take-anywhere, Pump-From-Any-Well kind of hand well pump system. Because it's portable...it has to be lightweight. (A 100 foot system weighs less than 9 lbs.) And because it's a water delivery system for emergency backup...It HAS to be ready to go when you need it. The EarthStraw Deep Blue™ is the Lightest, Fastest, and Smallest hand pump on the planet. It can retrieve water from more places than any other pump system anywhere...Period! It comes out of the box, ready to pump without a single second of assembly required. It will coil up, carry in one hand or sling over a shoulder, and tuck away in the trunk of your car for next time.

Deep Blue™ is the most affordable hand well pump system available...by a long shot. But we didn't cut corners. Take a look:

Billet Handle

The oversized handle may be pumped with one hand or two. It is machined from a solid aluminum billet, and anodized for corrosion resistance. Although lightweight, it is built for performance and comfort. The large finger opening is designed with room for gloves for pumping in harsh winter conditions.

Carbon Fiber Stroke Rod

The power-stroke rod provides up to 22" of stroke. The stroke rod takes more abuse than any other part of the system, so we built it from heavy wall carbon fiber to make it strong, flexible and lightweight.

Solid Brass Foot-valve

The foot valve is precision machined from solid brass and designed to withstand the demanding pressures created while pumping water from deep below the surface.

Viton O-Rings

Viton is the "carbon fiber of flexible materials." It is the strongest, most wear resistant flex-polymer available in an o-ring. Viton is temperature resistant, and resists abrasion in harsh environments. Viton consistently exhibits superior performance in difficult test conditions, under extreme pressures and through hundreds of thousands of strokes.

Stainless Steel and Brass

All of the critical valve and structural components inside are constructed from solid stainless steel or brass. These combine to produce a very innovative, corrosion resistant pumping mechanism like no other.

Pump Body

The trademark blue pump body of the Deep Blue™ system is made from a special cross-linked version of high density polyethylene (HDPE) which is resistant to wearing, kinking, and ovaling, while also withstanding the high internal pressures developed while pumping. The unique properties of this material make our proprietary "pump in a coil" concept possible.

Field Shortening The Deep Blue™ System

You will need to purchase an Earthstraw Deep Blue Length Adjustment Kit. The steps provided below are for reducing the length of a Deep Blue™ system. You will first shorten the stainless pump wire, then the blue pump body. Tools/supplies needed include tape measure, 3/8" and 9/16" open end wrenches, pliers, needle nosed pliers, duct tape, HD wire cutters, hammer, anvil (or substitute), Teflon Tape, permanent marker, utility knife.

step 1 Shorten the Stainless Steel Pump Wire

Remove aluminum billet handle by unscrewing the rod-end using a 3/8" wrench. **(see figure 1)**

figure 1

Grip the flattened end of the wire and the stainless steel ball with pliers and pull it thru the carbon fiber rod a few inches. Wrap a piece of tape around the ball **(see figure 2)** and wire to keep the ball from sliding down the wire.

figure 2

If shortening the system 15 feet (for example), pull the wire out and cut off 16 feet, (Yes, cut off an extra foot) with heavy duty wire cutters. Discard the cut off, but keep and reuse the stainless steel ball.

Pull the newly cut wire end out of the pump **(see figure 3)** to make it easier to work with. Place the ball over the end of the newly cut wire and tape it in place temporarily, a few inches from the end.

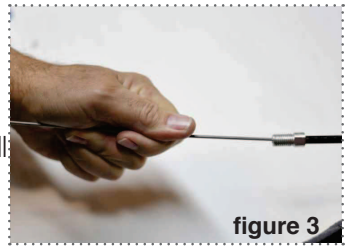


figure 3

Place the wire end over an anvil **(see figure 4)** or other solid steel surface (like the ball hitch on your truck) and strike the end of the wire "hard" to produce a flare, tapered like a fishtail. **(see figure 5)** Refer to the original flare you cut off as a guide.

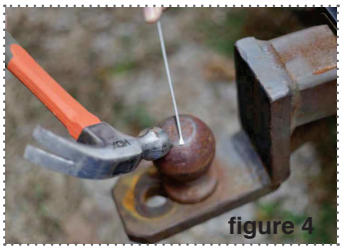


figure 4

Remove the tape from the ball and push the wire in place. Apply 3 wraps of Teflon tape to rod end threads **(see figure 6)**. Reinstall the rod into the aluminum handle. The threads should be fully engaged, but do not overtighten. You will strip the aluminum threads.

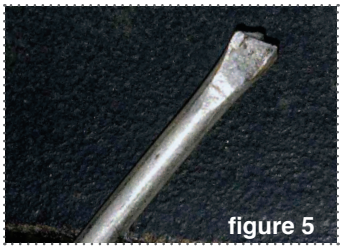


figure 5

figure 6

Shorten the Blue Pump Body

Using a 9/16" wrench, unscrew (counter-clockwise) the brass foot valve **(see figure 7)** Be careful to catch the stainless steel ball inside. You will need to reuse it.

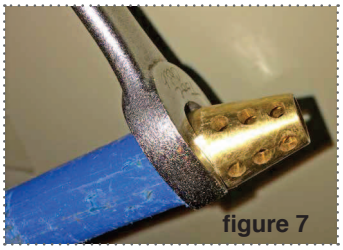


figure 7

If shortening the system 15 feet (for example), measure and make a cut-mark 15 feet from the end.

Using a sharp utility knife, at the cut-mark carefully cut through the blue pump body SQUARELY **(see figure 8)** and discard the 15 foot section of blue pump body. Trim to square up the end if necessary.

figure 8

Insert the blue ball-stop (looks like a Mercedes emblem) into the blue pump body and push it in up to the mark on the wooden guide **(see figure 9)**.

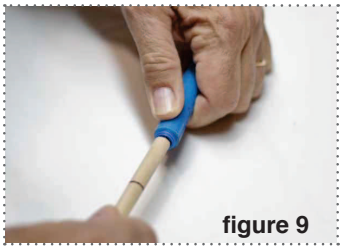


figure 9

Carefully thread the end of the pump body about ½" deep, using a standard 1/4-18 NPT tap included in your kit **(see figure 10)**.

Remove any plastic debris inside with needle nose pliers to avoid leaking.

Insert the stainless steel ball and screw the brass foot valve in. Do not overtighten.

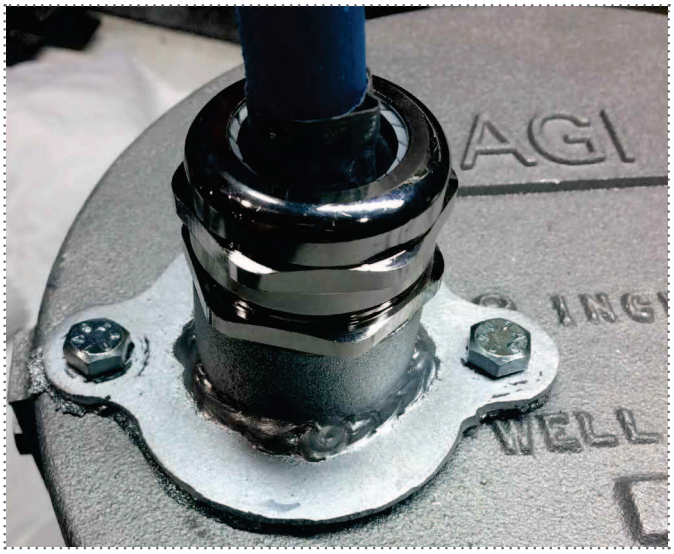
figure 10

Simple Deep Blue™ Mounting Solutions

It is a very good idea to install the appropriate mounting system in advance so that when you need water, the well is ready to go. Pre-mounting means that you will have access to water in minutes when needed. And, you can easily remove and store the pump after use, to avoid tampering or theft. We provide either Top or Side Mount brackets, to accommodate 4, 6 or 8" (nominal) casing diameters.

Side or Top Mount? Which is best for me?

The most complicated part of installing any hand well pump system is the mounting...until now! Deep Blue™ is engineered for simplicity, and our innovative mounting kits are no exception.



Top Mount

Plumbing and electrical wiring configuration possibilities at the top of the well casing can vary by well driller, age of the well and regional norms. Installers of newer wells in areas prone to cold weather, will often bury the plumbing and electric wires underground, leaving a clean and uncluttered well cap suitable for a "Top Mount" bracket which requires a drilled access hole and a few screws to affix the mount on top. The Deep Blue™ Top Mount kit comes with a thick flexible gasket that will help seal the bracket in uneven or non-flat surfaces.

SAFETY FIRST—BEFORE YOU START, Turn off the breaker which powers the existing electric well pump. Inspect to make sure that you can drill through the cap or seal in an area where the hole saw or drill bit will not encounter plumbing or electrical wires inside the casing.

Tools/supplies needed include permanent med-tip marker, electric drill, 1" bi-metal hole saw, 7/16" socket/ratchet, silicone sealant.

The steps below assume that you do not have an existing access hole in the well cap or seal. If you do, and can mount the bracket over an existing access hole, skip steps 1 and 2 below.

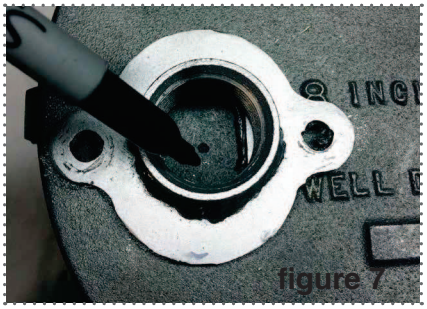


figure 7

step 1 Locate the bracket on the well cap or seal and mark a drill-hole location **(see figure 11)** by inserting a marker through the threaded center hole of the bracket.

step 2 Using a standard 1" bi-metal hole saw (not included), drill a hole at your mark **(see figure 12)**, through the cap, being careful to penetrate no further than necessary so as not the encounter or damage anything inside. Withdraw the hole saw and the "cutout."

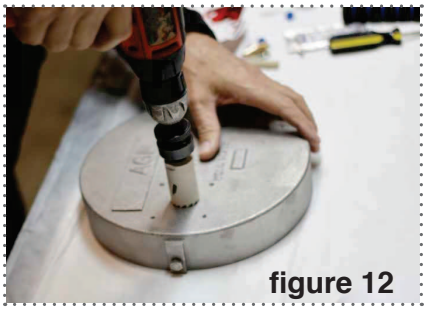


figure 12

step 3 Carefully align the bracket over the access hole ensuring that your pump will have unobstructed access. (Tip-Insert the pump partially if needed to align the holes.)

step 4 Mark the 2 screw hole locations on the well cap or seal.

step 5 Remove the bracket and drill the 2 holes using the drill bit provided. Then thread the holes **(see figure 13)** using the ¼"-20 tap included with your kit.

figure 13

step 6 Using the ¼" bolts provided, secure the bracket in place, using silicone sealant under the gasket (if needed) to produce a water-tight seal. Note: Overtightening the bolts will either break the screw or strip the threads. If you have access to the underside of the cap, add additional ¼"-20 nuts (not included) to the bolts for added strength

step 7 Screw the Gripper Nut into the bracket and tighten. **(see figure 14)**

figure 14

Side Mount

Some older wells, often in warmer climates, are cluttered on top leaving no room for a Top Mount bracket. The ingenious Side Mount bracket allows the Deep Blue™ to enter the side of the casing, away from the tangle of plumbing and wires. And while well casings have become more dimensionally uniform over the years, there are many inconsistencies in the outside diameters (OD) depending on the age of the well and local sources of well casing. The thick flexible gasket that comes with this kit will help seal the bracket even with some reasonable deviation from "standard" casing diameters.

SAFETY FIRST—BEFORE YOU START, Turn off the breaker which powers the existing electric well pump. Inspect to make sure that you can drill through the casing in an area where the hole saw or drill bit will not encounter plumbing or electrical wires inside the casing.

Tools/supplies needed include permanent med-tip marker, electric drill, 1.5" bi-metal hole saw, 7/16" socket/ratchet, silicone sealant.

Note: Variations in casing diameters may require you to first modify the factory radius on the mounting bracket. Opening or closing the radius can be done by careful and thoughtful use of pliers and a hammer.

step 1 Hold the bracket up to the casing in the approximate location for mounting and mark a drill-hole location by inserting a marker through the threaded center hole of the bracket.**(see figure 15)**

step 2 Using a standard 1.5" bi-metal hole saw (not included), drill a hole at your mark, through the side of the casing, **(see figure 16)** being careful to penetrate no further than necessary so as not the encounter or damage anything inside. Withdraw the hole saw and the "cutout."

step 3 Carefully align the bracket over the freshly drilled access hole ensuring that your pump will have unobstructed access. (Tip-Insert the pump partially if needed to align the holes.)

step 4 Making sure the bracket is vertical, mark the 2 screw hole locations on the casing. **(see figure 17)**

step 5 Remove the bracket and drill the 2 holes using the drill bit provided. Then thread the holes using the ¼"-20 tap included with your kit. **(see figure 18)**

step 6 Using the screws provided, secure the bracket to the casing using silicone sealant under the gasket if needed to produce a water-tight seal. Note: Over-tightening the screws will either break the screw or strip the threads.

step 7 Screw the Gripper Nut into the bracket and tighten. **(see figure 19)**

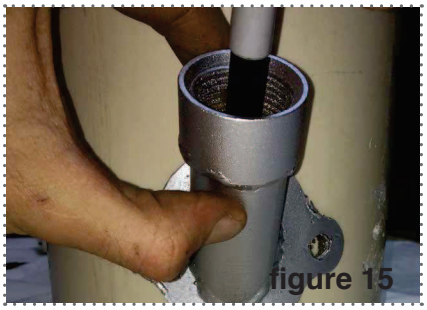


figure 15

figure 16

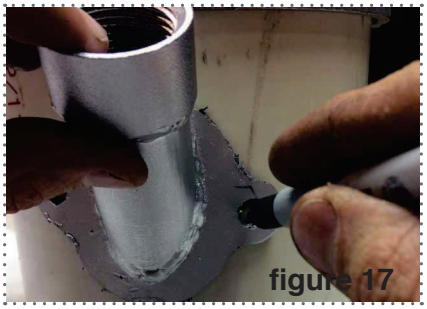


figure 17

figure 18

figure 19