



INSTALLATION PROCEDURES

INSTALLING THE PDU LINER KIT SYSTEM

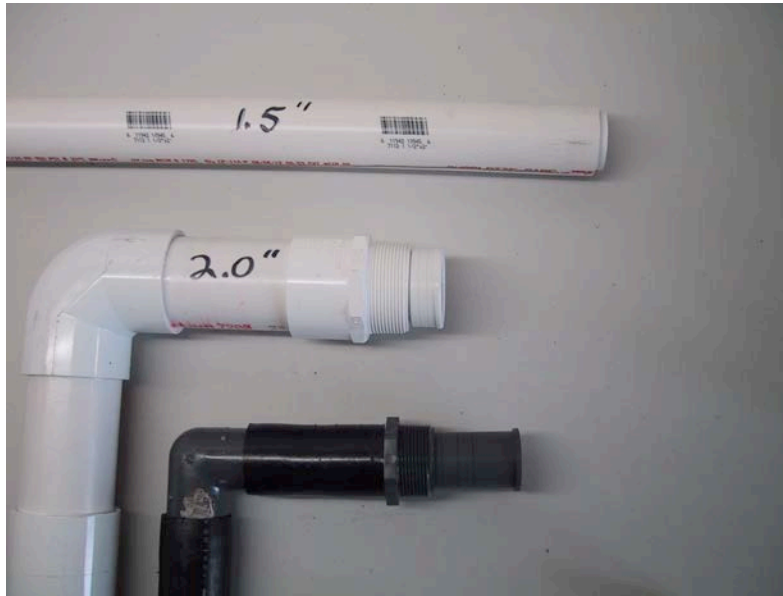
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Tools Needed for Installation

- The only required tool needed from Pipes Down Under for liner installation is the patented Air pressure assembly to pressurize the liner itself. The cost of this assembly is only \$85.00. It is used for all liner installations. It consists of a shut off valve, ¼” NPT male and female connectors and a low-pressure (0-30 psi) gauge. This assembly enables you to connect the tail section of our liner directly to your female fitting attached to your compressor hose.
- A 3-pound or larger compressor with an adjustable output pressure gauge.
- Duct tape is needed to cover the poolside fitting’s female pipe thread from epoxy and to hold the liner and sleeve in place in the existing pipe at the pump side while curing.
- A pipe measuring system to measure the actual length of the existing pipe being repaired. This can consist of a flexible fish tape able to pass around hard 90’s (elbows) or a pig connected to a pig line to be sent through the existing pipe by either water or air pressure.

Installation

- First check that the overall length of the liner is at least one foot longer than the overall pipe length being repaired. (You will need at least six inches of liner to be exposed at the existing pipe exit point).
- **Before liner insertion:** Make sure to “test fit,” the white retainer or gray encasement end-sleeves into the poolside fitting and the opposite stock pipe at the pump side. They should easily fit into both ends with some looseness. The white retainer sleeves are interchangeable for both fitting and stock pipe ends. The gray encasement sleeves are not interchangeable. The narrow gray sleeve is for the fitting-pool side while the larger diameter gray sleeve is for the cut stock pipe or pump side.



Interchangeable Retainer Sleeves (White) inserted in a 1.5" stock pipe (top) & a 2" fitting (mid). The Gray Encasement 'fitting sleeve' being slipped into a 1.5" Black-Poly fitting screwed over a 1.0" liner (not shown).

- Cut to fit the length of the retainer or encasement sleeve with a hacksaw at the grooved markings, if needed, to make sure the liner is not squeezed or choked when installing (inserting) the sleeve when gluing into place. This will normally happen when there is an elbow within five inches of the stock pipe or fitting entry points.



- Rough sand the I.D. of the 'pool side' fitting and the 'pump side' stock pipe for cleanliness before liner insertion using the enclosed emery cloth.
- **Liner Entry points:** General rules of entry:
 - Insert the liner into the existing pipe where the most restrictive elbows are located.
 - Insert the liner where the smaller ID section of pipe is located if the existing pipe is made up of two different diameters.
 - For Skimmer repair: Enter the liner at the skimmer. For Main repair- Enter from pump side towards the pool bottom. For Pool wall return jet- Enter where most elbows are located. Either fitting or pump side.
- **Before liner insertion:**
- Place the enclosed 2'x1.5' plastic drop cloth between the ground and the pipe so no debris will enter the pipe. Small stones may jam during insertion of the liner due to the small clearance between the liner and the existing pipe I.D.
- The "tag line" connected to the head of the liner is to be uncoiled without being twisted. Lube the tag line with the yellow wax lubricant starting at the liner head. Lubricate the liner with the soap lubricant starting at the head towards the tail.
- Insert the tag line attached to the liner head through the existing pipe by either tying a pig directly to the tag line or pig line connected to the tag line. You can also tie the tag line to your fish tape to pull the tag line through the pipe.
- Before connecting the liner to your compressor, make sure your compressor outlet pressure gauge is reading zero and the air assembly valve is closed. Slowly **pressurize the liner from 3 to 9 psi, Normally 5 psi**, using the compressor regulator valve located on your compressor. You want the liner to be flexible enough to pass through elbows but also have enough stiffness to push through the existing pipe. You may need to increase the pressure up to 09 psi for more affective liner stiffness the longer the liner length is inserted.



Air pressure assembly



Pressure assembly connected to liner with shut-off valve in closed position

- Make sure the compressor is always powered so there is no pressure loss during installation.
- The tag line only helps guide the liner head around the pipe elbows. There are two liner heads installed. The internal pressurized bulkhead is located 2 & 1/2 inches back from the liner head. The tag line is anchored at the aft head and freely passes through the forward, exposed (white) liner head. You assist the liner around an elbow by using a pumping (caterpillar) action with slight tugs while always pushing at the tail end of the liner. DO NOT pull or tug the tag line by more than 15 pounds! Only slight tension or slight tugs during transit is necessary in the straight runs. Too much pulling tension on the line will 'choke' the liner from transiting through the fittings in the pipe.
- Pushing the liner is the proper Primary insertion method. Adjusting the liner pressure also assists in transporting the liner through the pipe if needed.



This picture shows the tag line connected to the two internal liner heads. The liner tail section is showing the ¼" NPT male plug to be connected to your compressor via the air pressure assembly.

- Make sure you have at least six inches of exposed liner at the exit point of the liner and four inches at the liner entry point at the liner tail section. Hold the 6" of liner head at the exit point before slowly releasing the air pressure from the liner. The liner will try to retract into the pipe while it seats itself during depressurizing.
- Cut off both heads at the liner head, making a clean straight cut exposing 3 inches of liner exiting the pipe in order to screw the end sleeve to the liner.



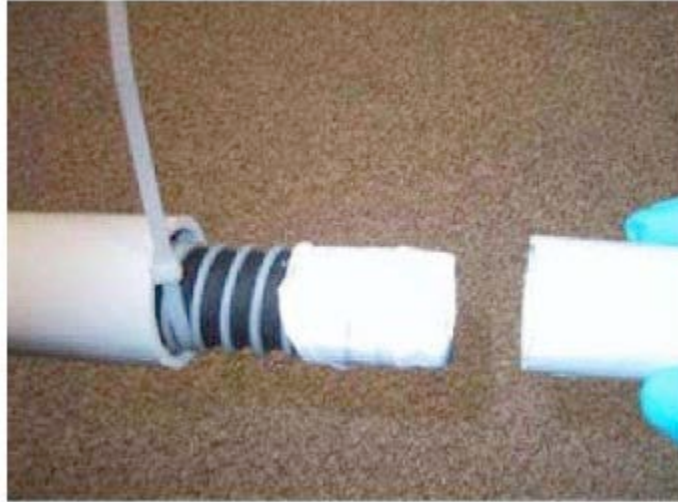
Notice how the Interchangeable Retainer Sleeves (White) are screwed into the 1.125" and 1.5" liners then inserted in the 1.5" stock pipe (top) & 2" pipe fitting (below). A large O.D. sized Encasement (Gray) Sleeve is screwed over a 1.0" liner before being slipped into a 1.5" Black-Poly stock pipe.

- Apply duct tape over the female pipe threads located in the poolside fitting before inserting the liner and/or applying epoxy.
- Clean off any residual soap lubricant from the liner and the pipe before sealing with epoxy.
- Always epoxy the fitting (pool) side first, lastly sealing the pump side.
- Install the encasement or retainer sleeve first. Then epoxy over both the sleeve and liner before inserting into main drain fitting. See following picture.



- By using a rubber expansion plug covered with the enclosed wax paper, push the liner with the attached encasement or retainer sleeve into the fitting so that the sleeve will bottom out inside the fitting. Tighten the plug to hold the liner and sleeve in place until the epoxy cures (45 min.).

- Add a slight amount of epoxy over the exposed three inches of the liner O.D. before screwing (counterclockwise) the **encasement (gray) sleeve over the liner** **OR** add a slight amount of epoxy over the **retainer sleeve (white)** male threads before screwing the sleeve all the way **into** the liner. Apply the rest of the epoxy over the total sleeve **and** exposed liner to seal the liner and sleeve inside of the existing pipe I.D. Push the sleeve and liner into the stock pipe and duct tape over the pipe and sleeve to hold the sleeve into place while curing.



This photo shows a gray encasement sleeve being screwed over a 1.0" liner before gluing the encasement sleeve into the stock pipe (pump) side. Use only a slight coating of epoxy as a lubricant. Do not use too much epoxy as shown above. Too much epoxy will plug the encasement sleeve opening.



This picture shows encasement and retainers sleeves sealing the liner into the stock pipe (pump) side. Use duct tape to hold the liner and sleeve into place by taping over the sleeve and pipe at the pump side while curing



Sealed Retainer sleeve inserted into a two inch stock pipe

- **Warning Sticker:** Apply the warning sticker on the pump-side connector fitting with the enclosed liner. Take some clear tape and cover the warning label in order to waterproof.

End of Installation