

Securing a Hose Fitting

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This is one of my favorite uses of a knot, as it is a better solution than anything you can buy in a store.

The typical garden hose that you buy has cheap thin-wall fittings on the end that rarely last very long. I usually cut them off and replace them with machined brass fittings as shown in the picture.

The problem is how do you secure these fittings? The commonest way is probably with a stainless steel hose clamp. These work, but are unfriendly to your hand when tightening the fitting. A few decades ago I found the perfect solution in the *Ashley Book of Knots*: use a constrictor knot. Go to http://en.wikipedia.org/wiki/Constrictor_knot to learn more and see how to tie it.

Here's a picture of a fitting on one of our garden hoses held on by two constrictor knots:



The trick to putting these knots on is also given in Ashley: use two sticks to apply pull in opposite directions on the rope to tighten the knot. I usually do this sitting in a chair. I use 1/8" nylon braided cord. I tie a bowline in one end of the line and slip one stick through it, tie the constrictor around the hose, then wrap a number of jamming turns around the other stick. One stick goes between my feet and I stand up and lift on the other stick. Be careful not to pull too tight with small cord, as it can cut into the hose. I use a pair of scissors to cut the line flush with the knot.

When you do this, that constrictor knot is permanent. I really mean permanent, as you'll have to cut it off with a knife if you want to remove it (slice the part that runs over the top and the knot will fall off). If you want to tie something temporarily with a constrictor knot, either slip the knot or put a nail or somesuch under the knot; when the nail is pulled out, the knot can be loosened.

This is, in my opinion, the best method of securing garden hoses to fittings. I've used it to secure air hoses to my air tank and in a variety of other similar applications. It could be used to secure a radiator hose in a car, at least well enough to get you home. In fact, the constrictor knot will secure things to most any rounded convex surface. As mentioned, make sure to slip the knot if you want to untie it later.

The only disadvantage of the method is that brass fittings can turn inside the hose when you tighten an opposite-sex fitting on it. A fix for this might be to chuck the fitting in the lathe and put a thin knurl on one of the barbs. I've found that one knot isn't enough to keep the fitting from turning in the hose over time, but two separate knots in 1/8" braided nylon line that are pulled with two sticks as tight as I can usually stops things from rotating.

Once you see how well it works, you'll find other applications for the technique. Some of our garden hoses

have been working for us for over two decades with this method of holding the fittings on. Another use of the constrictor knot is to whip the end of a rope quickly.

I also use these constrictor knots when using a barbed splice in the middle of a piece of damaged hose. Cut out the damaged section and splice together. This is a nicer solution than e.g. the overpriced plastic hose splices that attach with two screws:



Find a cheap plastic 5/8" or 3/4" splice for \$1 or under and make the splice in a few minutes of your time. Another reason I don't like these bulky splices is that they catch on things when you're dragging the hose around the house.

Here's an example of using some 3/4" hose in a sprinkler system. I needed to add a new sprinkler line to an existing one. The existing one on the left with the green sprinkler has the pipe down about 16" below the surface of the concrete pad. The new line off to the right edge of the pad is about 6" below the pad. Thus, I needed an easy way to adjust for the height difference. This chunk of hose was sitting in my shop, so it was a natural choice. A 3/4" rubber hose will just slip over a 1/2" NPT nipple. I cut the nipple in half and cut some barbs on it in my lathe (although it would probably work fine without the barbs). You can also buy barbed hose adapters to e.g. 3/4" pipe fittings -- that's what's used on the right end of the hose, as I had one of those. Both hose ends were secured with a constrictor hitch tightened with two sticks.



While this 3/4" hose is substantially more expensive than 3/4" PVC pipe, I've used it in a few locations for running underground sprinkler line -- the flexibility can solve problems like this height mismatch. Yes, I could have used some 135° glued PVC fittings, but this hose solution is simpler overall and allows for a bit of adjustment (you can also buy flexible PVC hose, but it will be \$3 to \$5 per foot depending on size). This hose is the brand Flexogen and I know from personal experience that this hose material will last for two decades or more outside in the sun. We have one chunk of this type of hose that could easily be over 30 years old and it's still working (although it's stiffer than newer hose).

Update 1 Jul 2012: Here's what an old hose looks like that has had the constrictor knot cut off. You can see how deeply the knot compressed the hose. This hose is clamped on the fitting so strongly that the only way I can get it off is to cut the hose longitudinally (a tip is to put waterproof silicone grease on the fitting and inside the hose and things will be easier to take apart later -- this also works with black poly pipe fittings). One nice thing about these heavy brass fittings is that they last -- this one is probably pushing 30 years old and is going onto the end of a hose that got hit by the lawn mower last summer.



Update 9 Jun 2020: The only complaint I have about this method of securing these fittings is that the fitting can turn in the hose. This could be fixed by making a custom brass fitting that has the usual barbs and a short knurled section after the barbs. One of the constrictor hitches would tighten the hose on the knurled area and this would protect against the fitting turning when you e.g. tightened a nozzle onto the hose. In fact, the best treatment would be with a straight knurl, an operation usually called coining, as it's like the serrations on the edge of coins to show when someone tried to file off some of the metal. I haven't made any of these fittings yet, as they are typically made from $1\frac{1}{16}$ brass hex stock, something I don't have handy. The hex is desired because sometimes I need to use pliers to tighten or loosen these fittings.

If you choose to make such a thing, the standard US hose thread is $1\frac{1}{16}$ -12 with the thread outside diameter often 1.04 to 1.05 inches.