RAIN BARREL WORKSHOP

Presented by your

AmeriCorps
NJ Watershed Ambassadors

Sponsored by the

Pequannock
Environmental Commission

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INTRO: RAIN-BARREL PARTS

Downspout and Elbow

Screen cover/Elastic cord

Overflow port
(without hose)

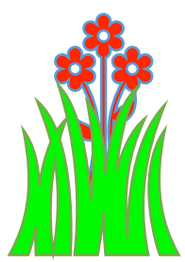
Spigot

Riser platform

Hose attachment

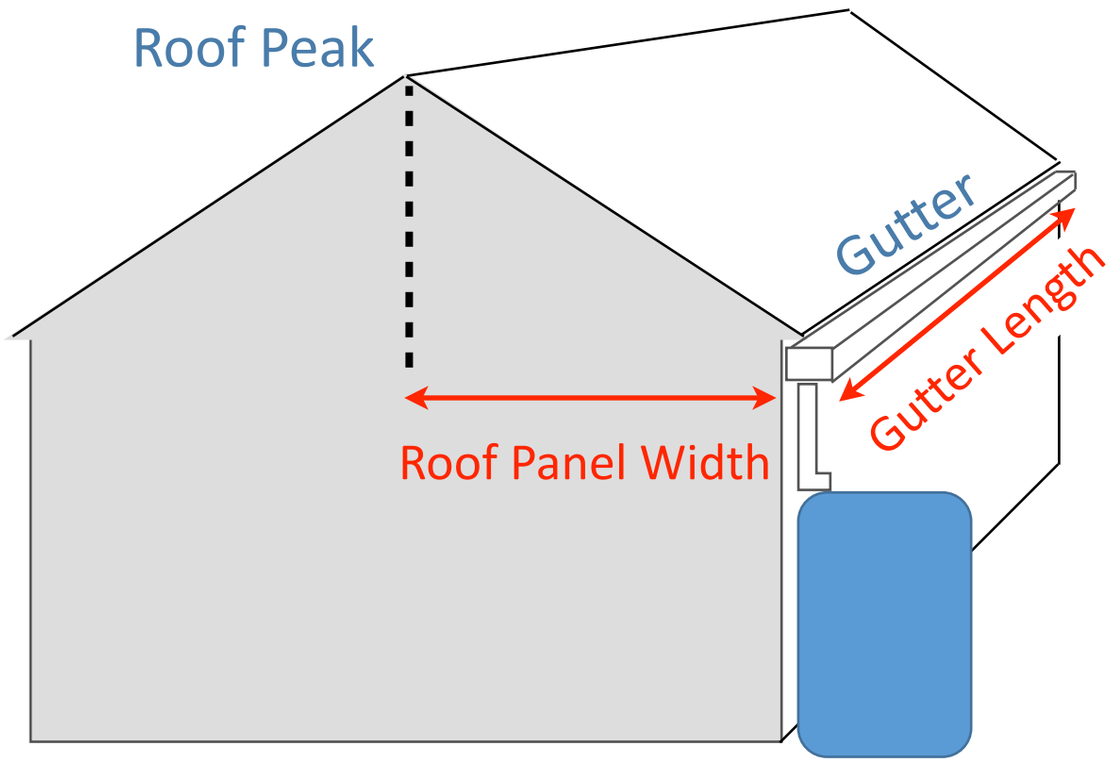
RAIN-BARREL BENEFITS

1. Reduces roof runoff
   a. Less street and stream flooding
   b. Less pollution entering streams
2. Conserves drinking water
   a. Less for town to pump/treat/use
   b. Saves money on your water bill
3. Provides good quality gardening water, may be more convenient than using a connected hose, and can be set up to “automatically” send more rainwater to certain plants every time it rains.



HOW MUCH RAIN CAPTURED?

Concept: **Bigger Roof Area*** and/or **More Rain** **=** **More water in barrel**



Equation to calculate:

GUTTER LENGTH (feet)
x ROOF PANEL WIDTH (feet)
x RAIN DEPTH (inches)
x 0.623 (conversion factor)
= HARVESTED WATER (gallons)

www.rainwaterharvesting.tamu.edu

* Note: The roof area contributing rain to the barrel is the *horizontal* “footprint” of the roof portion draining to the barrel, and can be calculated as the gutter length times the “roof panel width” (the horizontal distance between the roof peak and the gutter, as shown on diagram).

HOW MUCH RAIN CAPTURED?

Concept: **Bigger Roof Area*** and/or **More Rain*** **=** **More water in barrel**

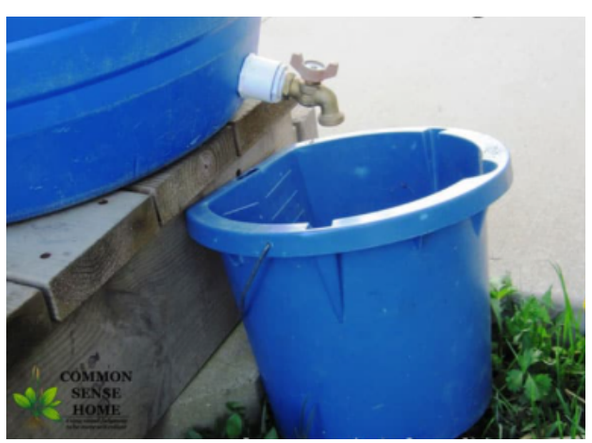
Example: Volume Collected for Different Rain, Roof Sizes

Rain (inch)	Contributing Roof Size: 10ft x 10ft	20ft x 20ft	30ft x 20ft
0.1	*6 gallons*	*25 gallons*	*37 gallons*
0.2	*12 gallons*	*50 gallons*	*75 gallons*
0.5	*31 gallons*	*125 gallons*	*187 gallons*
1.0	*62 gallons*	*250 gallons*	*374 gallons*

FULL 55-gal Barrel

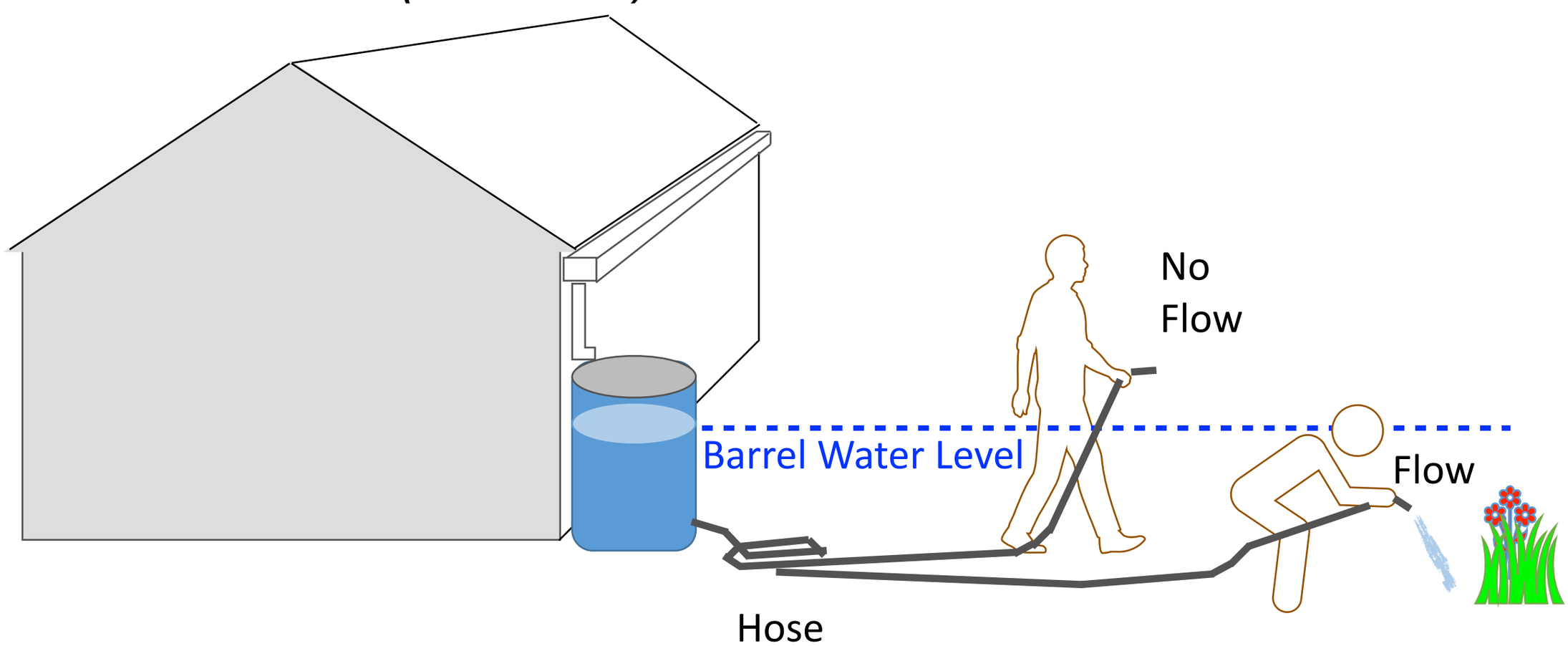
USING RAIN BARRELS

1. Keep spigot closed until ready to use water.
2. The barrel will keep filling each time it rains and will fill to the top if you don't use the water first.
3. Once full, the barrel will overflow. To avoid overflow water at your foundation, connect a hose to the overflow spout and put the free end away from your foundation.
4. Collect water from the barrel into a bucket/watering can, or connect a hose to the spigot.



USING RAIN BARRELS

4. Gravity (not line pressure) controls flow through a hose!
   4.1. If hose's free end is *below* the barrel's water level, water will flow out the hose.
   4.2. If the hose's free end is *above* the barrel's water level, water will NOT flow out the hose.
5. *Tip: you can turn the flow "off" (or "on") by lifting the hose end above (or below) the water level in the barrel.*



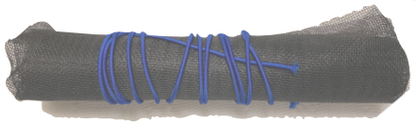
TIPS FOR RAIN BARRELS

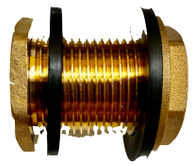
1. **Never** drink water from a rain barrel.
2. **Always** screen-off openings to keep out mosquitos.
3. Raise barrel on blocks to provide higher flow rate and easier access to the spigot, *but make sure the barrel is stable*.
4. Debris can clog your spigot and keep the barrel from draining. Prevent clogs by clearing debris from the top screen after each rain, and by occasionally cleaning out the barrel.
5. Barrel clean-out procedure:
    1. Drain the barrel through the spigot.
    2. Remove top screen.
    3. Carefully tip barrel on its side (*do not "roll" on the spigot*), and use a pressurized hose to rinse the inside.
    4. Turn barrel upside down to empty it of water and debris.
6. Do not allow water to freeze in barrel - this may damage the barrel and/or the spigot. Store barrel upside down in winter.

Search "Rain Barrel Education" for more tips!

Rain Barrel Kit - Provided Parts List

- Rain Barrel (with pre-drilled holes)
  (note: yours may be white or blue)
- Kit bag:
  - Screen/cord bundle
  - Cardboard box (spigot)
  - Overflow port





Not supplied: Tools & Other Items

- Small (~3/4”) socket to use as a weight (2 washers or a bolt-nut is ok)
- Adjustable wrench (for 1.5” nut)
- Hack saw or reciprocating saw (to shorten your downspout)
- Scissors (optional)
- Metal file (optional)
- 2-3 concrete blocks or bricks (optional)

Rain-Barrel Assembly Instructions

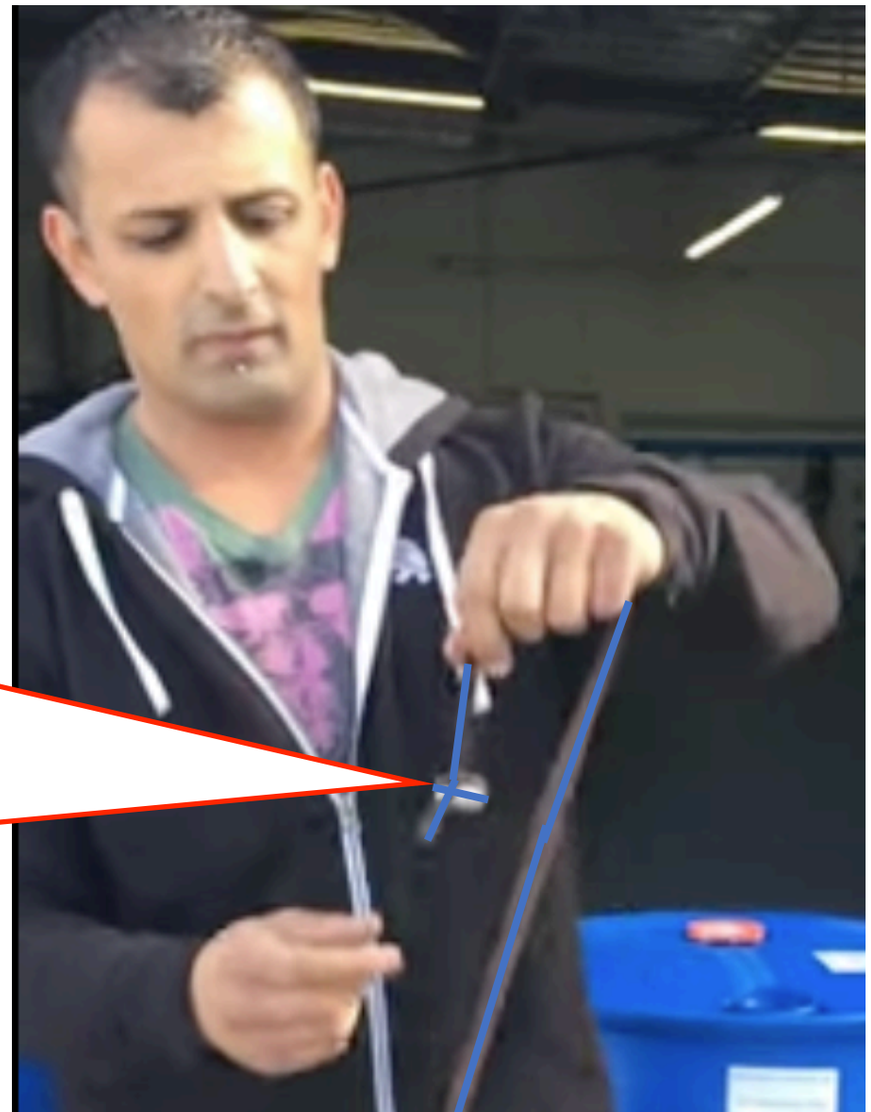
1. Collect your barrel, kit bag, tools, etc. in your work area.
2. Make sure the barrel is standing upright (the top has holes in it), then:
   - 2.1. Locate the “front” - there is a hole near the bottom for the spigot.
   - 2.2. *Note: the front of every barrel has embossed fill-volume indicators; we marked with a Sharpie for this photo.*
   - 2.3. Locate the top front plug.
   - 2.4. Remove the cap (if there is one), and unscrew the plug. *Tip: if the plug is tight, try a screwdriver or tool handle to help loosen it, or try the other plug.*

Rain-Barrel Assembly Instructions

3. From the kit, get the screen/cordage bundle. Remove the cord, then unfold the screen and lay it flat, somewhere out of the way for now.

4. Get a small weight (like a socket) and tie one end of the cord to it. *This trick will make the next step much easier.*

Cord tied to a socket.



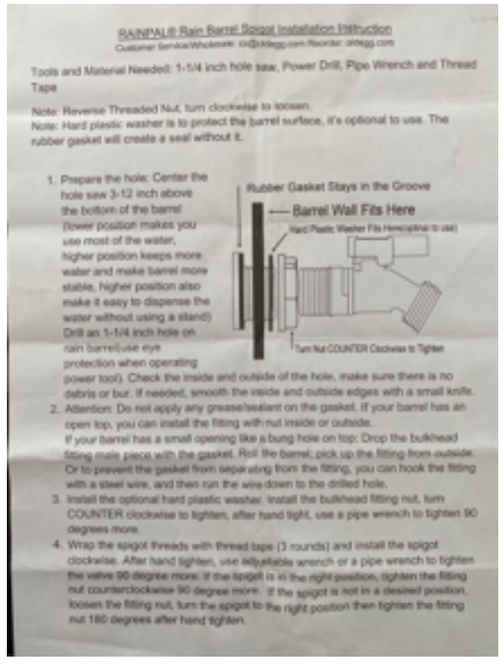
Rain-Barrel Assembly Instructions

5. From the kit, take out the cardboard box, open it, and remove the three items inside:
   5.1. Brass spigot assembly
   5.2. Thread tape
   5.3. Factory instructions

5.1 Spigot Assembly

5.2 Thread Tape

5.3 Factory Instructions


RAINPAL® Rain Barrel Spigot Installation Instruction

Tools and Material Needed: 1-1/4 inch hole saw, Power Drill, Pipe Wrench and Thread Tape

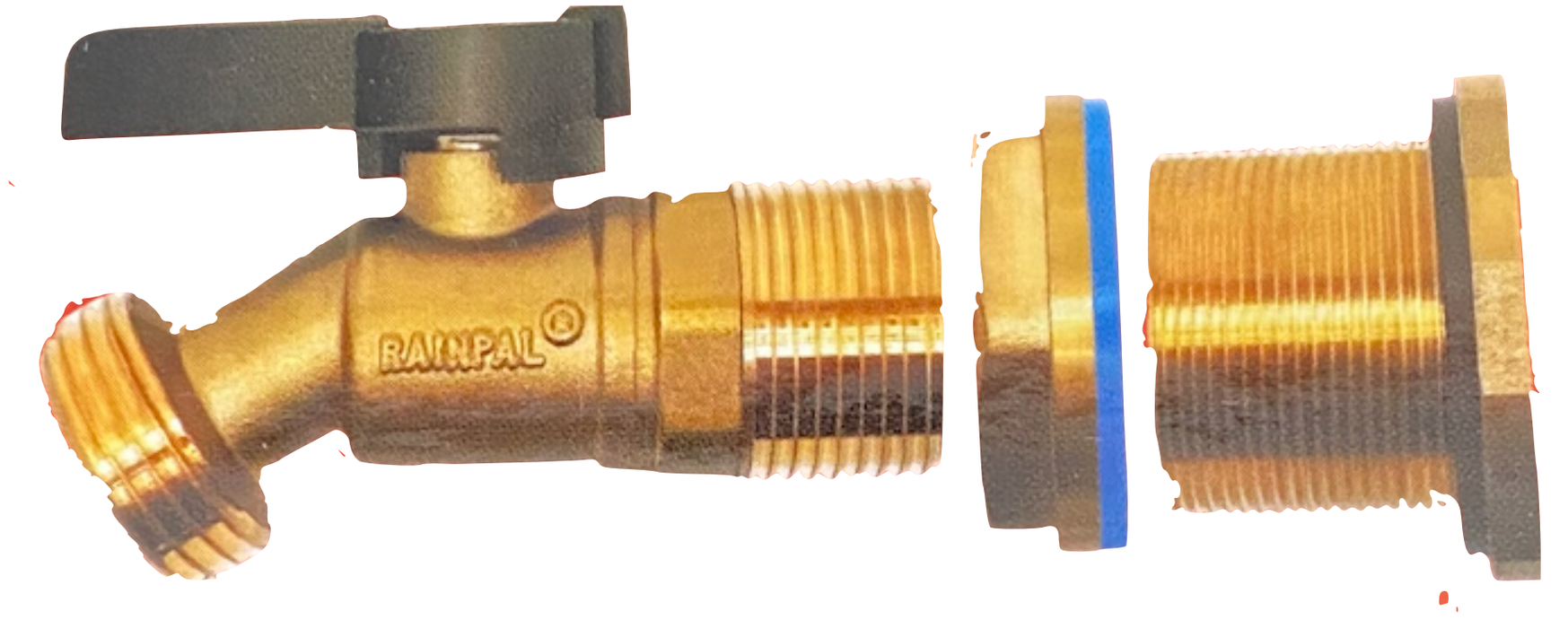
Note: Reverse Threaded Nut, turn clockwise to loosen.
Note: Hard plastic washer is to protect the barrel surface, it's optional to use. The rubber gasket will create a seal without it.

1. Prepare the hole: Center the hole saw 3-1/2 inch above the bottom of the barrel (lower position makes you use most of the water, higher position keeps more water and make barrel more stable, higher position also make it easy to dispense the water without using a stand) Drill an 1-1/4 inch hole on rain barrel(use eye protection when operating power tool). Check the inside and outside of the hole, make sure there is no debris or bur. If needed, smooth the inside and outside edges with a small knife.
2. Attention: Do not apply any grease/sealant on the gasket. If your barrel has an open top, you can install the fitting with nut inside or outside.
   If your barrel has a small opening like a bung hole on top: Drop the bulkhead fitting male piece with the gasket. Roll the barrel, pick up the fitting from outside. Or to prevent the gasket from separating from the fitting, you can hook the fitting with a steel wire, and then run the wire down to the drilled hole.
3. Install the optional hard plastic washer. Install the bulkhead fitting nut, turn COUNTER clockwise to tighten, after hand tight, use a pipe wrench to tighten 90 degrees more.
4. Wrap the spigot threads with thread tape (3 rounds) and install the spigot clockwise. After hand tighten, use adjustable wrench or a pipe wrench to tighten the valve 90 degree more. If the spigot is in the right position, tighten the fitting nut counterclockwise 90 degree more. If the spigot is not in a desired position, loosen the fitting nut, turn the spigot to the right position then tighten the fitting nut 180 degrees after hand tighten.

Rubber Gasket Stays in the Groove
Barrel Wall Fits Here
Hard Plastic Washer Fits Here(optional to use)
Turn Nut COUNTER Clockwise to Tighten

Rain-Barrel Assembly Instructions

6. Take the spigot assembly and separate it into its three parts:
    6.1. Spigot
    6.2. Locknut/Ring (blue)
    6.3. Bulkhead/Washer (black)



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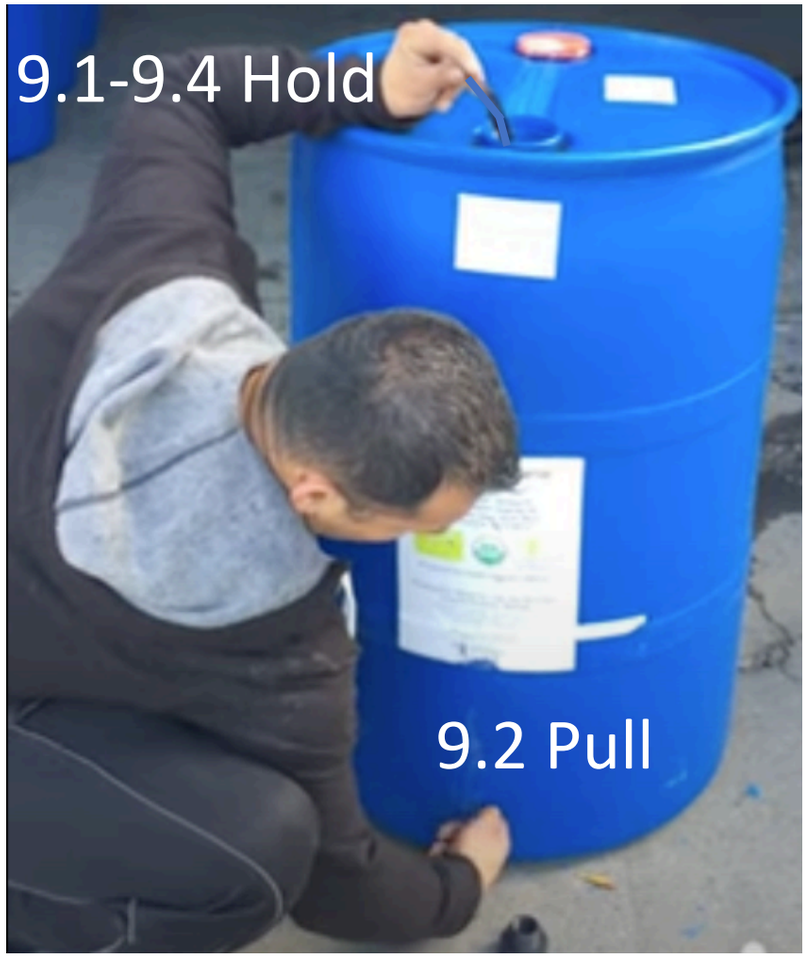
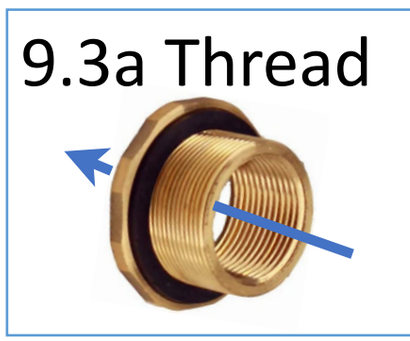
Spigot | Lock Nut & Ring | Bulkhead &Washer

7. Return the spigot and locknut/ring to the box for now.
8. Keep the bulkhead and thread tape close for the next step.

Rain-Barrel Assembly Instructions

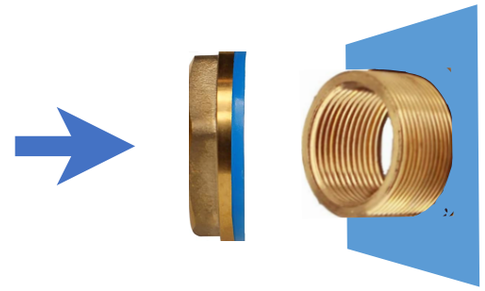
9. We will now install the spigot's bulkhead fitting:
   9.1. Holding the cord's non-weighted end at the top, drop the weighted end into the barrel *through the front top plug hole* so that it falls near the spigot hole at the bottom.
   9.2. Keep holding the cord at the top. Use your finger to pull the cord's weighted end out through the spigot hole. Set it on the floor. *Tip: step on the weighted end so it won't re-enter the hole*.
   9.3. Keep holding the cord. (a) Get the bulkhead and thread the cord into its male end. (b) Drop the bulkhead into the barrel's open plug hole. *The cord will "guide" the bulkhead's male end toward the hole*.
   9.4. Keep holding the cord. Poke a finger through the bulkhead and pull so the threaded end protrudes and it sits snugly against the wall.
   9.5. Release the top of the cord, pull the cord out the spigot hole and set it aside.





Rain-Barrel Assembly Instructions

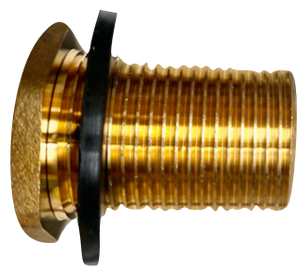
9. (continue with bulkhead assembly)
    - 9.6. Get the locknut/blue ring and, noting that it is *reverse threaded*, screw it **counter-clockwise** onto the bulkhead, being careful not to push the bulkhead into the barrel.
    - 9.7. Use an adjustable (pipe- or crescent-type) wrench or large pliers to tighten the locknut (again, **counter clockwise**) until it is snug. **Do not over-tighten the locknut**, as that could crack the barrel plastic.
10. Now we'll install the spigot.
    - 10.1. Get the spigot, thread tape, and scissors.
    - 10.2. Wrap thread tape 2-3 times around the longer threaded end of the spigot, then cut it.
    - 10.3. Insert the spigot's taped end into the bulkhead and screw in **clockwise** until snug.
    - 10.4. If the spigot is not upright (handle up), you may choose to loosen the locknut, adjust, and then re-tighten. It will work regardless.

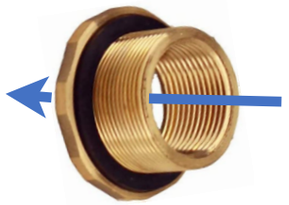


Rain-Barrel Assembly Instructions

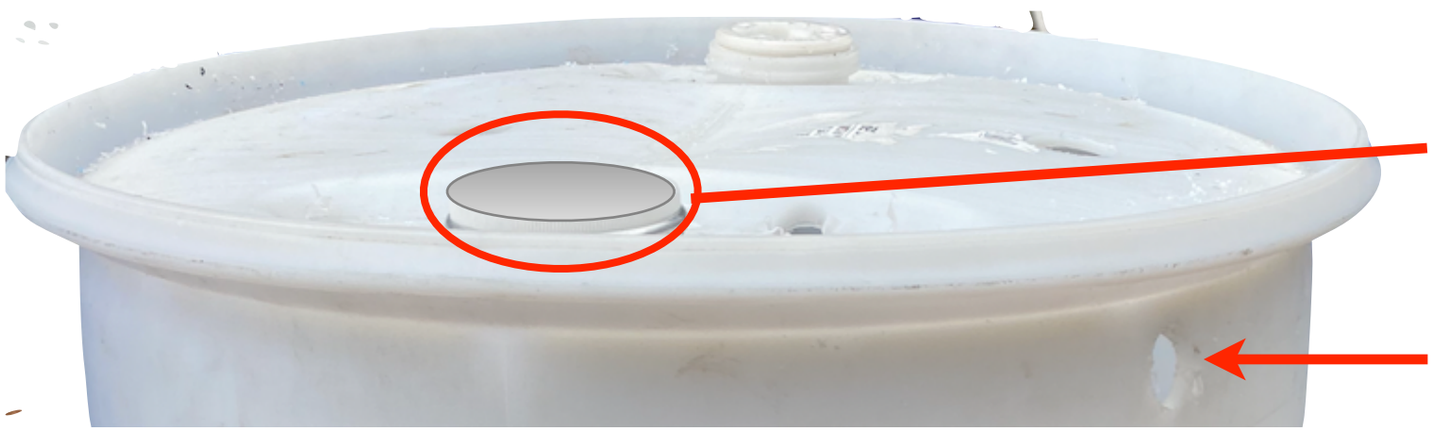
11. Now we'll install the overflow port into the overflow hole.
    Tip: this process is similar to the bulkhead installation.
    11.1. From the kit, get the overflow port and remove the nut and 2nd washer.

Overflow Port
(with 1 washer)





    11.2. Thread the cord's free end through the male (threaded) end of the overflow port.
    11.3. Locate the barrel's open (top) plug hole and overflow hole.
    11.4. While holding the overflow port and cord's free end, drop the cord's weighted end into the open (top) plug hole.

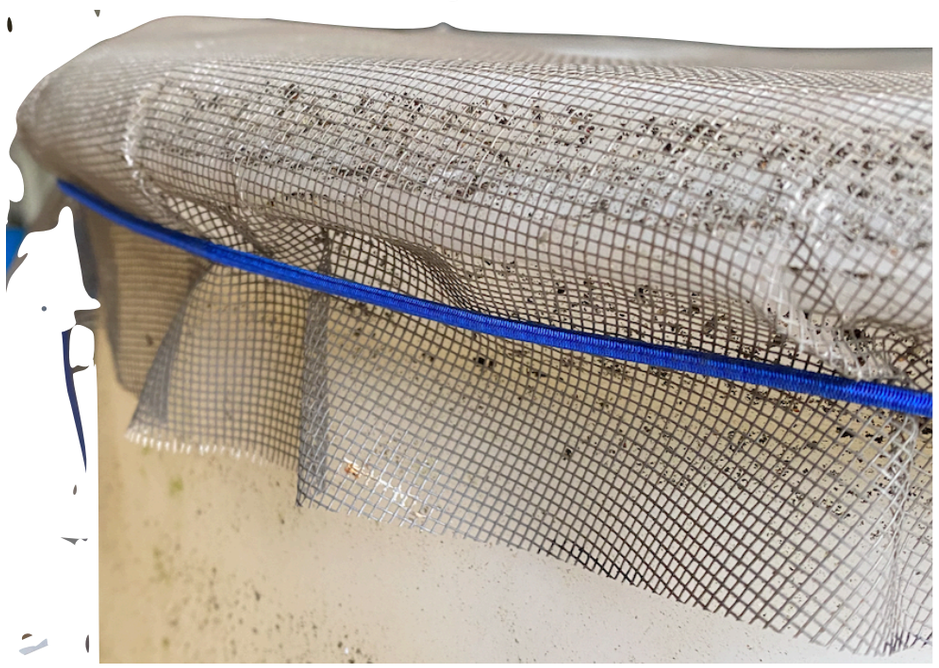


Rain-Barrel Assembly Instructions

11. (Overflow port installation, continued)
    - 11.5. Holding the cord's free end, pull the cord's weighted end out through the overflow hole. *Tip: if you can't reach the cord to pull it out, tip the barrel so the cord moves near the overflow hole,* ***being careful not to knock or roll over the spigot, which could break it****.*
    - 11.6. Step on the cord's weighted end to hold it to the floor.
    - 11.7. While holding the cord's free end, drop the overflow port into the top plug hole. Use the cord to guide the overflow port to the overflow hole.
    - 11.8. Use a finger to pull the overflow port so that the threaded part protrudes from and sits snugly against the barrel wall.
    - 11.9. Put the washer onto the threaded portion of the overflow port, ***being careful not to push it back into the barrel***.
    - 11.10. Screw the overflow nut onto the overflow port and hand tighten. Use an adjustable wrench or pliers to make snug. *Tip: do not over tighten, as the barrel plastic will crack.*
12. Replace the top plug (and cap, if it came with one).
13. Untie the weight from the cord.

Rain-Barrel Assembly Instructions

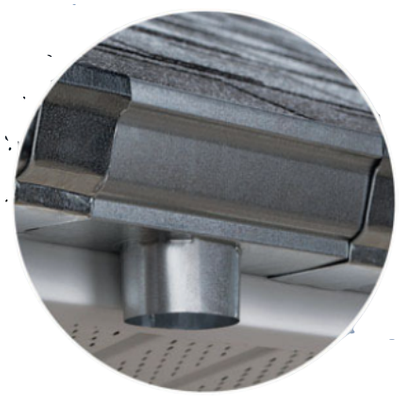
14. **Please use eye protection (such as goggles or safety glasses) before starting this step**.
    - 14.1. Take the elastic cord and place it around the rim, near the top of the barrel, so that you hold each end in one hand.
    - 14.2. Carefully tie the cord so that it is **lightly** stretched enough to stay in place on the barrel wall — not too tight, as the cord may snap and hit you in the eye. A simple “square” knot will work.
    - 14.3. Tip: the cord’s elasticity will allow you to easily hold the screen in place and remove it whenever needed (such as, if you need to dump the barrel to clean it out).
15. Get the screen and center it over the top of the barrel. There should be at least 2 or 3 inches overhanging the rim all the way around.
16. Hold the screen in place with one hand and use the other hand to move the cord up around the screen. Work your way around until the cord holds the screen all the way around the barrel.
17. If you wish, use the scissors to trim the screen (but don’t make it too small!)



Rain-Barrel Siting Considerations

1. Important issues to consider *before* placing your barrel.
   1.1. Barrel must be placed at a downspout.
   1.2. *Tip: the larger the roof area leading to the downspout, the more rain you will collect for a given storm*.
   1.3. Ground under barrel must be level, or made level by making a stable platform using concrete blocks or bricks (wood may rot over time, which may cause the barrel to tip or fall over).
   1.4. Barrel should not be near ledges, chairs, etc. upon which children may climb and topple the barrel.
   1.5. To make use of a hose attachment, barrel spigot must be *higher* than the areas to be watered, and within a distance that the hose will reach. Otherwise you can use a bucket/watering can.
   1.6. Roof areas under trees are more likely to clog with debris.
2. After deciding where to put the barrel, level out the ground in that area.
3. If you want a riser platform for your barrel, make the platform and make sure the platform is level and that the barrel is stable on top of it.

Downspout Connection Instructions



1. *Tip: the wide variation in gutter/downspout configurations means you'll need to adjust these instructions to suit yours!*
2. Decide if you want to purchase a new downspout/elbow or use what's existing. *Tip: we recommend keeping the existing downspout for winter, and using a different downspout piece for the rain barrel. A new 2"x3" downspout costs about $10 per 10-ft length, a new elbow costs about $5*.
3. Remove the existing downspout, or the lower segment of a multi-segment downspout. *Tip: this may require a ladder, and perhaps a screwdriver if the downspout is anchored to the wall or to the gutter.* ***Be very careful!***
4. Measure the downspout length needed to reach the barrel. *Tip:* we *recommend using an elbow (rigid or flexible) at the bottom of the downspout to divert flow onto the top of the barrel, and anchoring the downspout to the wall, which provides more wiggle room for the barrel.*

Downspout Connection Instructions

5. On a workbench or other stable surface, use a hack saw or reciprocating saw to cut the downspout to the marked length. **When cutting, use eye protection and be very careful of sharp edges.** *Tip: Use a file to remove sharp edges from the cut ends of aluminum.*
6. Reconnect the downspout to the protruding fitting on the underside of the gutter, anchor the downspout to the wall, and connect the lower elbow piece so that it will discharge over the widest part of the rain barrel.
7. *Tip: if your downspout is not anchored to the wall, it may be loose; to prevent it from falling, either anchor the downspout to the wall or, in a pinch, place a wedge under the elbow to stabilize the downspout.*
8. **Congratulations, you have completed your rain barrel installation!**