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How to build and install a rain barrel

Residential water use increases 40 to 50% during summer months due to outdoor water use.

What Is a Rain Barrel?

A rain barrel collects and stores rainwater from rooftops to use later for lawn and garden watering. Water collected in a rain barrel would normally pour off your roof directly or flow through roof gutter downspouts and become runoff. Depending on your yard, this runoff can travel onto paved surfaces and eventually into a storm drain.

Why Use Rain Barrels?

❑ Rain barrels conserve water and help lower costs (a rain barrel can save approximately 1,300 gallons of water during peak summer months).
❑ Rain barrels reduce water pollution by reducing stormwater runoff, which can contain pollutants like sediment, oil, grease, bacteria and nutrients.
❑ Rain barrels are inexpensive and easy to build and install.

Modified downspout water flows to rain barrel through screened atrium grate

Overflow drain pipe, when barrel is full water flows onto lawn

Garden hose for watering when not in use clip to top of barrel
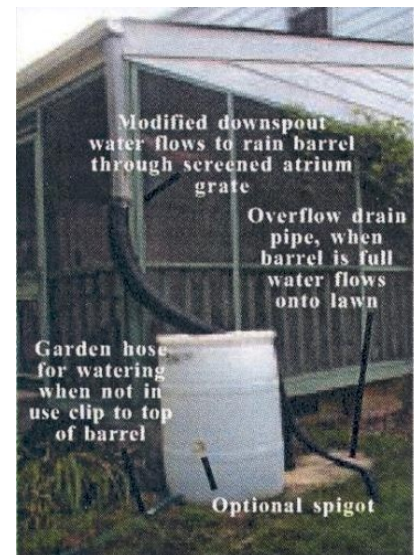
Optional spigot

Instructions

The following steps explain how to build and install a rain barrel. Steps can be modified as desired as long as the rain barrel does not leak or pose any danger to children or human health. The majority of the supplies listed below can be found at most home improvement, plumbing and hardware stores. New 50 – 55 gallon plastic containers can range from $31 to $45 each, used ones can range from $5 to $20 each. For additional information about operation, maintenance and ready-made rain barrels refer to our information sheet, *Rain Barrels*.

Supplies
❑ One 50 - 55 gallon plastic container drum
❑ One 5' section vinyl garden hose (3/4" OD x 5/8" ID)
❑ One 4" diameter atrium grate (basket used in garden ponds and pool skimmers)
❑ One ½" PVC male adapter
❑ One ¾" x ½" PVC male adapter
❑ One 5' section of drain hose, drain line, or sump pump line (1&1/4")
❑ One 1&1/4" female barbed fitting and one 1&1/4" male threaded coupling
❑ One vinyl gutter elbow
❑ Drill (or a hole saw)
❑ Router, jig saw or coping saw
❑ Measuring tape

Optional
❑ One ½" brass spigot
❑ Waterproof sealant (silicone caulk, PVC glue)
❑ Teflon tape
❑ Fiberglass window screen material or mosquito netting
❑ Cinder blocks or wooden crate

Step 1. Cut Holes in Barrel

Cut lower drain hole

Measure about 1 inch above the bottom of the barrel where the barrel side begins to rise toward the top. Using a ¾" drill bit (or hole saw), drill a hole through the barrel. *If using a different size fitting, use appropriate size drill bit.*

Cut upper drain hole

Mark the upper drain hole according to where you want the overflow to be located in relationship to the lower drain. Use a 1&5/8" hole saw to cut out the overflow hole.

Cut top hole for atrium grate (for filtering leaves and other debris)

Using the atrium grate as a template for size, mark a circle at the center of the top of the drum. Drill a ½" hole inside the marked circle. Use a router, jigsaw or coping saw to cut until the hole is large enough to accommodate the atrium grate, which filters out large debris. Don't make the hole too big – you want the flange of the atrium grate to fit securely on the top of the barrel without falling in. *If using alternative kit, cut a six to eight inch diameter hole in the center of the barrel and cover the hole with the hardware cloth. Secure overlapping edges with the sheet metal screws. Fiberglass window screen can be laid over or under the hardware cloth for mosquito control.*

Cut notch to hold hose

Using a ½" bit or hole saw, cut out a notch at the top of the barrel rim (aligned so that it is above the lower drain hole). The notch should be large enough so that the end of the hose with the adapter will firmly snap into place. *Alternative kit includes a ½" plastic fitting with shut-off valve attached to the lower drain hole fitting. A short, 5' section of garden hose is not necessary, garden hose can be detached as desired.*

Brass Spigot – A ½" brass spigot can be installed at a desired height above the lower drain hole for convenient filling of pails and watering cans.

Step 2. Set Up Barrel and Modify Downspout

Set up barrel

Since water will only flow from the garden hose when the hose is below the barrel, you can place the barrel on high ground or up on cinder blocks or a sturdy wooden crate underneath your downspout.

Modify your downspout

Rain barrels should be drained and removed for the winter months to prevent ice damage. It is recommended that you remove the existing downspout and elbow intact and store for reuse in the winter. You can then add another downspout section that will need to be custom cut to an appropriate height above your rain barrel. Two, connected downspout elbows (forming an S shape) or hinged extension should sit about two inches above the rain barrel inlet hole. Flexible corrugated plastic pipe can be used when using atrium basket inlet design.

Step 3. Assemble Parts

Attach garden hose to lower drain hole

Screw in the ½" PVC male adapter to the lower drain hole. The hard PVC threads cut matching grooves into the soft plastic of the barrel. Unscrew the ½" PVC male adapter from the hole and wrap threads tightly with Teflon tape and coat coupler threads with waterproof sealant (optional). Screw the coated adapter back into the hole and let it sit and dry for 24 hours (optional). Attach 5-foot garden hose to the PVC male adapter. Attach the ¾" x ½" PCV male adapter to the other end of the hose (this can be readily adapted to fit a standard garden hose).

The alternative kit uses a ½" brass self-sealing fitting and a ½" brass double threaded adapter. A ½" plastic fitting with a shut-off valve is screwed onto the adapter. Garden hose can be attached/detached as needed.

Attach drain hose to upper drain hole

Put the 1&1/4" male threaded coupling inside the barrel with the threads through the hole. From the outside, screw the 1&1/4" female barbed fitting onto the threaded coupling. Use silicone on the threads (optional). Attach 5-foot section of drain hose to upper fitting. *The Alternative kit uses self-sealing fittings.*

Place atrium grate and screen in top hole

Using PVC glue, secure a piece of fine mesh window screen inside or outside of the atrium grate to filter out debris and control mosquitoes (optional). Place the atrium grate into the hole (basket down).

Alternative Kit

- One 52 gallon used, white plastic container drum
- Three sq. ft. of ¼" hardware cloth and three sq. ft. of fiberglass window screen
- Twelve, 5/8" no. 8 stainless steel self-tapping sheet metal screws
- One 1&1/4" brass fitting (self-sealing)
- One 1&1/4" plastic female barbed adapter
- One 5' section of drain hose, drain line, or sump pump line (1&1/4")
- One ½" brass fitting (self-sealing)
- One ½" brass garden hose to ½" male pipe thread adapter (two-way, double threaded adapter)
- ½" plastic garden hose fitting with shut-off valve
- Vinyl garden hose
- Two roof gutter elbows connected to form an S shape, or a hinged metal or vinyl downspout extension.
- Roof gutter downspout section

Optional
- One ½" brass spigot
- Cinder blocks or wooden crate

Necessary tools:
- Drill (or a hole saw)
- Router, jig saw or coping saw
- Measuring tape
- Screwdriver

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