



clean
hands
for all
lavamae^x

DIY HANDWASHING
STATION INSTRUCTIONS

V1

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Hygiene is a human right. Unhoused people everywhere deserve and desperately need a way to wash their hands. To expand access, we designed this toolkit for you to bring handwashing to your community.


Our DIY handwashing station can hold enough water for up to 500 hand washes at a time, and is made from readily accessible materials that are low in cost compared to commercial handwashing rentals. It can be built, deployed, and maintained by communities anywhere there is access to fresh water and gray water disposal.

IN PARTNERSHIP WITH



Choose your own adventure!

There's no one right way to design your station. Many factors can affect your ultimate design—ease of use, local regulations, parts availability, and more. We've created a flexible framework that you can adapt for your application and have outlined the key considerations to guide your decision-making. We want you to feel empowered to make it your own!

When you see this icon  it's decision time. We'll share the pros and cons of the options available so you can choose what's best for you.



Materials + Tools



(2) 32 Gallon Trash Bin W/ Lids



(2) 1/2" Union Bulkhead Union Washer Fittings *(1 optional)*



(4) 1/2" X 3/4" PVC Male Reducer Adapter



(1) 5' 3/4" PVC Pipe



(2) 3/4" Brass Pex Barb x 1/2" Male Pipe Thread Reducing Adapter



(4) 3/4" 90 Degree PVC Elbow



(2) 1/2" Spigot *(optional)*



(1) 1 Gallon Bucket



(1) Sink Drain



10' Vinyl Tubing



(2) Hose Clamps



(2) U Clamps



(10) 1/4" Bolts with Nuts



(1) 18" x 24" corrugated plastic sheet



(1) Galley Pump *(choose 1)*



a. Manufactured



b. DIY



c. 3D printed



Power Drill



1/4" Hole Saw



1/2" Hole Saw



PFTE Tape



Tape Measurer



Marker



PVC Cutting Tool



Dremel



Phillips Screwdriver



Flathead Screwdriver



Crescent Wrench



Socket Wrench with 1/2" Socket



Water Resistant Construction Adhesive



PVC Cement



Towel

What to consider before you build:

1

Carefully consider the best location to deploy the units.

A heavily trafficked area with access to fresh water, and gray water dumping access is an ideal location to place the units.

2

Maintain and clean the units, everyday.

To ensure cleanliness and prevent the spread of germs, units need to be cleaned on a daily basis. Units will need to be refilled and emptied depending on usage.

3

Utilize staff or volunteers for unit maintenance.

Assign staff or volunteers on a consistent, rotating schedule. Educating staff, supporters, and volunteers who will maintain the unit is critical.

4

Test out the hand-washing station before gluing the parts.

Ensure the water is properly coming out of the faucet, there are no leaks or unstable connections in either unit, the pump is working correctly, and that materials are in their final places. Once you have completed a trial run, dry all parts with a towel or let things air dry before applying glue.

Clean Water Bin

Sink Basin

Gray Water Bin

Pump Assembly

Dispensers

Finishing the Build

Option 1A

- + the fresh water draws out through the lid
- + long-term leak proof with holes in the can above the waterline
- you're working against gravity to pump up and out of the tank

Option 1B

- + the fresh water draws out through a spigot at the bottom
- + gravity is working in your favor, making it easier to pump
- there's potential for leaks in the future with a hole below the waterline



CLEAN WATER BIN

Materials + Tools

- A** (1) 32 Gallon Trash Bin W/ Lid
- B** (1) 1/2" Union Bulkhead Union Washer Fitting
- C** (2) 1/2" X 3/4" PVC Male Reducer Adapter
- D** (1) 5' 3/4" PVC Pipe
- E** (1) 3/4" Brass Pex Barb x 1/2" Male Pipe Thread Reducing Adapter
- F** (1) 3/4" 90 Degree PVC Elbow
- G** (1) 1/2" Spigot (Option 1B)



1. Power Drill
2. 1/2" Hole Saw
3. PTFE Tape
4. Tape Measurer
5. PVC Cutting Tool

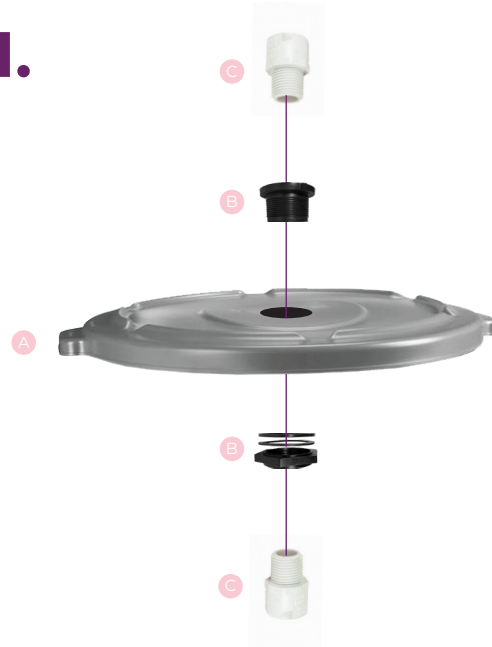


CLEAN WATER BIN

Option 1A

1. Use 1/2" Hole Saw to make hole in lid. Wrap PTFE tape around both PVC Male Reducer Adapters
2. Cut 3" piece of PVC for top. Measure height of can, bottom PVC to hover 1" from bottom of can. Cut at 45 degree angle.
3. Use glue to secure Brass Thread Reducing Adapter to PVC elbow.
4. Assemble

1.



2.



3.



4.



CLEAN WATER BIN

Option 1B

1. Use 1/2" Hole Saw to make hole in right side, 3" from bottom of bin. Wrap PTFE tape around both PVC Male Reducer Adapters.
2. Cut 3" piece of PVC at 45 degree angle.
3. Secure spigot.
4. Assemble.

1.



2.



3.



4.



Clean Water Bin

Sink Basin

Gray Water Bin

Pump Assembly

Dispensers

Finishing the Build

SINK BASIN

Materials + Tools

- A (1) 32 Gallon Trash Bin Lid
- H (1) 1 Gallon Bucket
- I (1) Sink Drain



1. Dremel
2. Marker



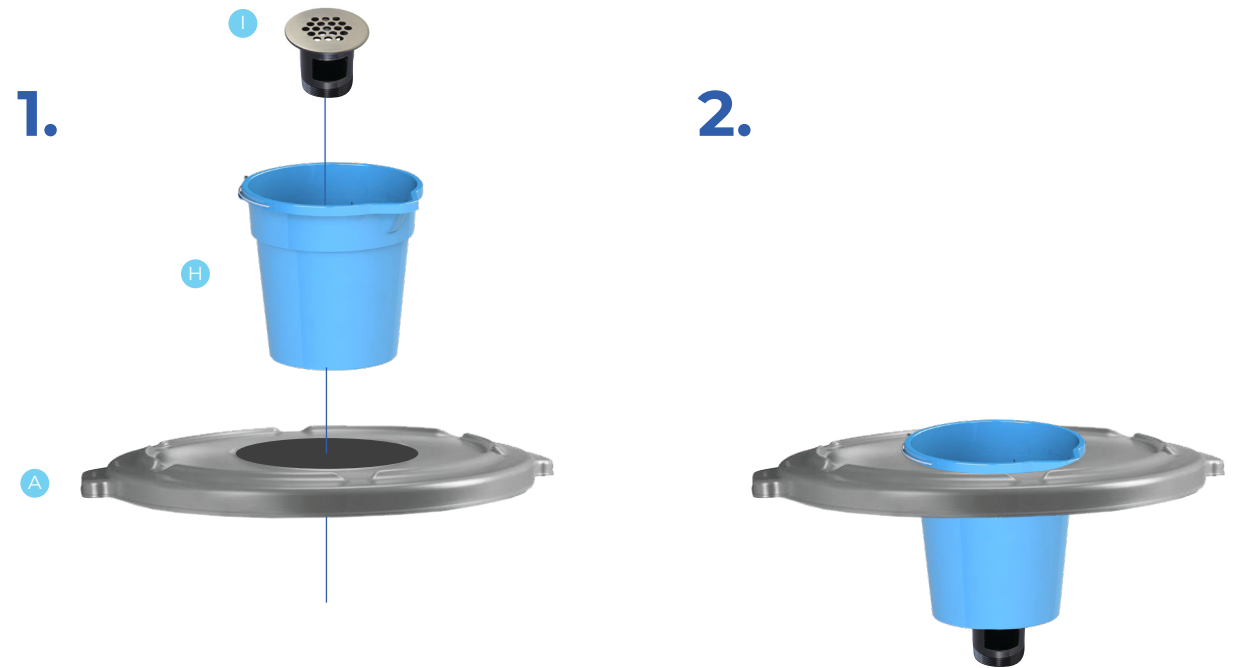
Build


1. Use bottom of drain to draw a circle for the drain's hole

Use bottom of the bucket to draw a circle for the sink's hole.

Use dremel to cut both holes.

2. Ensure that drain is as flush to the bucket as it possibly can be.



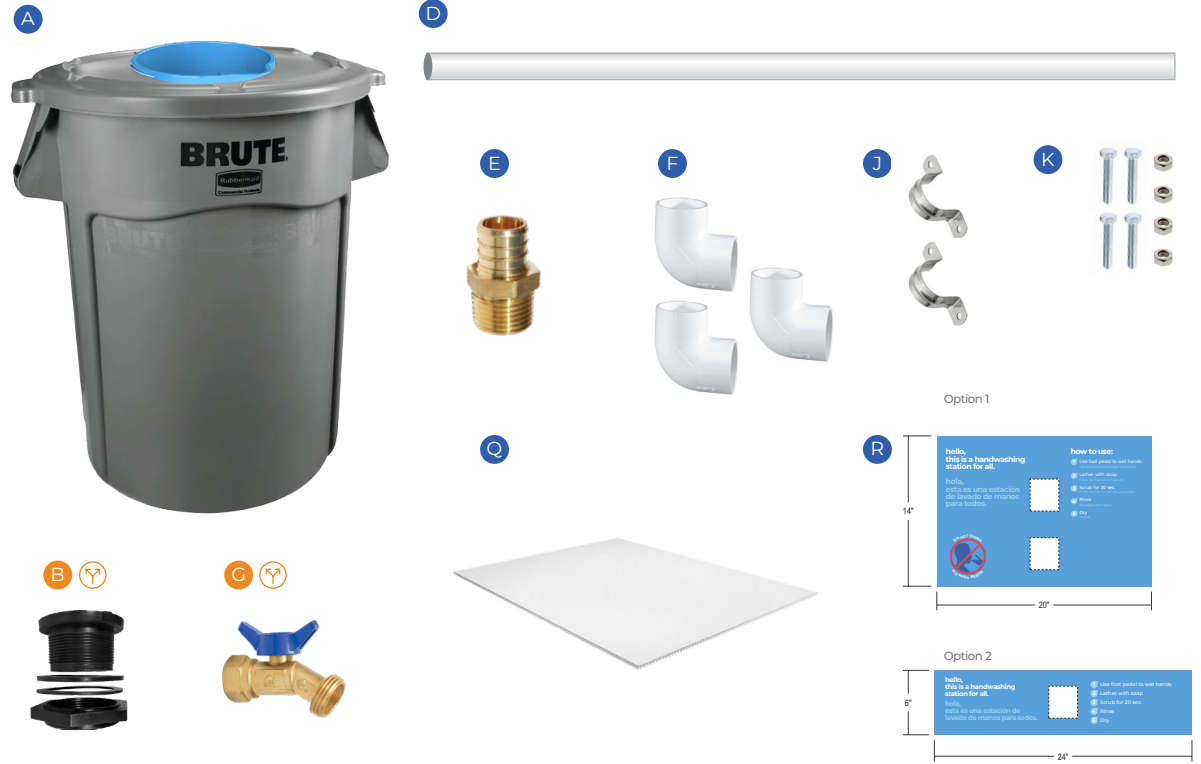
Clean Water Bin
Sink Basin
Gray Water Bin 
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Dispensers
Finishing the Build

GRAY WATER BIN

Materials + Tools

- A** (1) 32 Gallon Trash Bin W/ Lid
- D** (1) 5' 3/4" PVC Pipe
- E** (1) 3/4" Brass Pex Barb x 1/2" Male Pipe Thread Reducing Adapter
- F** (3) 3/4" 90 Degree PVC Elbow
- J** (2) U Clamps
- K** (4) 1/4" Bolts w/ Nuts
- Q** 18" x 24" Corrugated Plastic Sheet
- R** Backsplash Graphics
- B** (1) 1/2" Union Bulkhead Union Washer Fitting
- C** (1) 1/2" Spigot

1. Power Drill
2. 1/2" Hole Saw
3. PTFE Tape
4. Tape Measurer
5. PVC Cutting Tool
6. Marker



GRAY WATER BIN

Build

1. Cut corrugated plastic sheet to size with a hole in it for the faucet and apply decal.

Place PVC through handle of trash can. Cut faucet to desired height, ensuring that users can comfortably access.

2. Secure PVC to trash bin with U Clamps.


If you choose to add spigot:

3. Use 1/2" Hole Saw to make hole in side of bin.
4. Secure spigot.

Optional Spigot

+ ease of dumping
- potential for future leaking



Clean Water Bin
Sink Basin
Gray Water Bin
Pump Assembly 
Dispensers
Finishing the Build

PUMP ASSEMBLY

Materials + Tools

- L** (2) Hose Clamps
- M** (1) 10' Vinyl Tubing
- N** (1) Galley Pump (*choose 1*)

a. Manufactured

b. DIY

3"x3" 90 Degree PVC Mechanical Elbow

(2) 3"x1½" ABS Spig. x Hub Flush Bushing

1 ½"x½" PVC Reducer Bushing

(2) ½" ID Barb x ½" MIP Brass Hose Barb Adapter Fitting

1 ½"x ¾" PVC Reducer Bushing

¾" Thread x Hose Nipple

¾" PVC In Line Check Valve

c. 3D Printed

1. Power Drill w/ Flathead Bit
2. Flathead Screwdriver
3. PVC Cutting Tool

L



M



N



a.



b.



c.

1.



2.



3.



Build

1. Connect tubing between Fresh Water Bin to pump and pump to Faucet.
2. Secure tubing with hose clamp at each nozzle.

Choose Your Own Adventure

Purchasing galley pumps has been challenging during COVID, so we have other options if you run into the same roadblocks.

a. Manufactured

- + no assembly required
- availability: difficult to purchase or long lead times



b. DIY

- + can be made immediately with readily available parts; no special equipment required
- appearance and approachability; less recognizable as a pump and less straightforward to use for the first time



c. 3D Printed

- + simplified assembly once printed, looks like manufactured part
- requires access to 3D printing capabilities

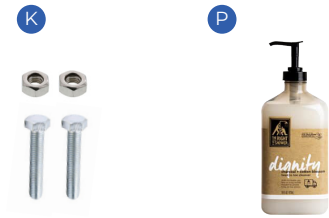


Clean Water Bin
Sink Basin
Gray Water Bin
Pump Assembly
Dispensers
Finishing the Build

DISPENSERS

Materials + Tools

- O** (1) 4" X 4" Electrical Junction Box
- P** (1) 32oz The Right to Shower Cleanser
- K** (2) 1/4" Bolts w/ Nuts



1. Power Drill
2. 1/4" Hole Saw
3. Phillips Screwdriver
4. Crescent Wrench
5. Socket Wrench w/ 1/2" Socket
6. Water Resistant Construction Adhesive

1.



2.



3.



4.



5.



6.



DISPENSERS

Build

1. Place Electrical Box on top of Gray Water Bin and use a marker to draw where bolts will be placed. Use drill to make holes for bolts.

Use 1/4" Hole Saw to make hole in lid of Electrical Box.

2. Secure nuts and bolts to lid with crescent and socket wrenches.

Glue soap pump to lid. Once dry, place soap inside of box and secure soap's pump to soap body.



Clean Water Bin
Sink Basin
Gray Water Bin
Pump Assembly
Dispensers
Finishing the Build

Materials + Tools

 Decal Kit

1. Can PVC Cement
2. Towel

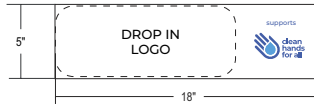


FRONT BUMPER

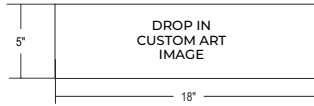
Option 1



Option 2

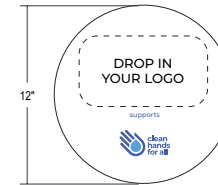


Option 3

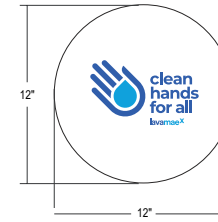


FRONT CENTER

Option 1



Option 2



PICTOGRAM SPOTS



1.



2.



Directions

1. Test station and make any adjustments. Dry station components with a towel and use PVC cement to glue all PVC connection points together.
2. Make it beautiful and make it your own! Place decals on the can—both from our kit and your organization if you have them or engage with artists and/or volunteers in your community.

Get creative with your station and really make it yours!

1.





Thank you!

Share your build with us on social media @lavamaex
#cleanhandsforall.

If you have any questions or suggested improvements please reach
out at <https://lavamaex.org/contact>.

