# IMPROVISED WASHING MACHINE

Washing machine is the machine used to wash the various types of clothes without applying any physical efforts. With washing machine you don't have to rub the clothes with hand or squeeze them to remove the water from them. The washing machine is also called as clothes washer or simply the washer. The washing machine enables you to wash your clothes automatically without having to supervise its operation. All you have to do is put the clothes in the machine and select the wash mode. The washing machine automatically takes in the amount of water and detergent required and it also automatically sets the timer for washing, rinsing and drying as per the selected mode and the amount of clothes.

Depending on the position of loading the clothes in washing machine, there are two types of washing machines: top loading and front loading washing machines. Both these have been described below:

1) Top loading washing machine: In this washing machine the clothes are loaded from the top of the washing machine. There is a cover at the top that helps loading and unloading of clothes in the round vessel that perform the function of the washer as well as the rinser and drier in the fully automatic washing machine. The top loading washing machine is preferred by the people who don’t want to bend the body while loading the clothes in the machine. This washing machine is more widely used than the front loading washing machine in many parts of the world.

2) Front loading washing machine: In this machine the clothes are loaded from the front side. The studies have shown that the front loading washing machines consume less electric energy, water and detergent and also give better washing results compared to the top loading washing machine.

In the European markets the market share of the front loading washing machines is 90%, while of the top loading washing machines is mere 10%. In contrast, the US has market share of 65% for top loading and 35% for front loading washing machines.

Depending on the total automatic features available in the washing machine, the top loading washing machines are also classified as: semi automatic washing machine and fully automatic washing machine. Let us see the details of the two:

1) Semi-automatic washing machine: This has separate tubs or vessels for the washer and the drier. There are two separate timers that enable setting washing and drying times. To wash the clothes you have to put the clothes in the wash vessel, put sufficient quantity of the water and detergent and then set the timer. After the specified time, the washing machine will stop. You can remove the clothes and dry them in the sun or you can dry them partially in the drier vessel by setting suitable time.

2) Fully automatic machine: In fully automatic washing machine there is only one tub that serves as the washer, rinser as well as the drier. Depending on the number of clothes or the weight of the clothes, the machine takes in the sufficient amount of water and detergent automatically and sets the timer for wash and drying automatically. All you have to do is just provide the water connection, put the detergent from time-to-time in its storage space and put the clothes, the fully automatic washing machine does the rest of things automatically.

Mechanical washing machines appeared in the early 1800s, although they were all hand-powered. Early models cleaned clothes by rubbing them, while later models cleaned clothes by moving them through water. Steam-powered commercial washers appeared in the 1850s, but home washing machines remained entirely hand-powered until the early 1900s, when several companies started making electric machines. The Automatic Electric Washer Company and Hurley Machine Corporation both began selling electric washers in 1907, while Maytag offered an electric wringer washer in 1911. In 1947, Bendix offered the first fully automatic washing machine, and by 1953 spin-dry machines overtook the wringer types in popularity.

The last wringer washer manufactured in the United States was made in June of 1990 at Speed Queen's plant in Ripon, Wisconsin. The major U.S. manufacturers today are General Electric, Maytag (Montgomery Ward), Speed Queen (Amana and Montgomery Ward), Whirlpool (Kenmore), and White Consolidated (Frigidaire and Westinghouse).

Many models with many varying features are now available; however, with a few exceptions, only the controls are different. The only difference between the washer in your home and the top-load washers in the laundromat is the ruggedness of construction.

The washing machine operates by a motor, which is connected to the agitator through a unit called a transmission. The motor and transmission are near the bottom of the machine, while the agitator extends up through the middle of the machine. The transmission is similar to the transmission in your automobile in that it changes the speed and direction of the agitator. In one direction (agitate), the transmission changes the rotation of the agitator and spin tub—the inside tub with small holes in it—into a back-and-forth motion. When the motor is reversed by the controls (spin), the transmission locks up and the agitator, transmission, and spin tub all rotate as a unit. Without the transmission changing the speed or direction, the unit uses centrifugal force to remove as much water from the clothes as possible. The motor is also connected to a pump. When the motor is moving in the spin direction, the pump removes the water from the tub and discards it through the drain pipe.

Models designed for use in other countries offer different features. One component required on all models sold in England (and possibly soon in the rest of Europe) is called the lid lock. Normally when the lid is raised the washer must stop for safety reasons. However, in England, when the washer is operating the lid must be locked closed.

Need a DIY clothes dryer? That’s easy: string up a line between two trees, fence posts, or whatever you’ve got. A DIY washing machine, however, is just a bit more involved… but as I’ve discovered after poking around, not much more. With a repurposed container for a “drum,” and a few other easily-available materials, you can be washing your clothes and getting some exercise in a few hours.

5 Plans for DIY Washing Machines

1. The Hillbilly Washer. We’ll start simple here – all you need for this project are a 5-gallon bucket, a toilet plunger, and a drill. Your arms will get a good workout…

2. The Slightly More Deluxe 5-Gallon Bucket Washer. If you want to take a slight step up from #1, just get your hands on a second bucket. You’ll be able to drain wash and rinse water much easier, and even add a spin function:

3. The Large Drummed DIY Washer. a 5-gallon bucket won’t hold a lot of laundry at once… but a thirty gallon will! See how to join it up with a 55-gallon pickle barrel for a large-capacity washer that still requires no electricity:

4. The Lever-Action Off-Grid Washer. Now we're getting just a bit more complex. Designed with the developing world in mind, the use of a lever gives a user more power for less human energy. The complete plans for Michael Perdriel's invention are available at Make; you'll need quite a few materials for this one. (via Survivopedia, which has also published a few other plans)

5. The Pedal Powered Washer. This isn't the first time we've featured one of these – Homeless Dave's plan appeared on sustainablog years ago – but John and Christy's pedal-powered washing machine is mighty sweet! This one requires some serious maker skills – there's some welding involved, for instance. I'd imagine, though, that a foot/leg powered machine would be a little easier to power for the 10-20 minutes required to get your clothes clean. Watch the video, and then check out this young couple's other efforts to live more sustainably in the D.C. area:

No matter how much you may love camping, hiking, and outdoor life, there is nothing quite like having clean clothes on hand. Unfortunately, during your escape from a riot situation or some other form of social collapse, you will find that washing clothes will be far more difficult than expected.

If you don't have a lot of money in your budget, this simple 5 gallon washing machine may be ideal for your needs. As an added bonus, you can repurpose the parts for other survival needs such as making burnable paper bricks, carrying items while you are bugging out, or just about any other need that arises.

Even though modern washing machines tend to be big, noisy, and use a lot of water, they operate on the same principles as the bucket washer. Essentially, a central agitator swishes the water and clothes around, which causes the dirt to be released from the fabric.

Soap aids in the process because one end of the soap molecule attaches to dirt, while the other attaches to the water. As the water agitates, soap them "pulls" the dirt from your clothes. For this particular design, a simple plunger acts as the agitator. You will find it much easier to use than a scrub board or a nearby rock sitting in a stream.

Building Steps

Step 1: Drill holes in the sides and bottom of one pail. When drilling these holes, try not to make them too large or too close together. Remember, this inner bucket will take a lot of pressure from agitating with the plunger.

Even though the outer pail will keep the water in, you will not want the plastic sagging or breaking apart just as you lift your clean clothes out.

Drill holes in the sides and bottom of one pail

Step 2: Drill holes in the plunger. As with the inner pail, it is best not to make too many holes, or ones that are too large. The plunger will fall apart faster, develop cracks, or not move the clothes around as well if the structure is too weak.

If you find that the plunger does not work for heavy garments, you may be better served by making a finned agitator and attaching a wooden handle to it.

Since most plungers are fairly weak, you can expect them to fold up or not work very well if the garments are too heavy. They work well for blouses and t-shirts, but not denim or fleece.

Drill holes in the plunger

Step 3: Drill a hole in the center of the top lid. Make sure that the handle of the plunger fits easily through the top of the lid and can be pushed up and down with no problems.

As time goes by, this hole will also wear a good bit. If the hole is a little tight to start off, it is better than too loose. As time goes by, you may need to replace the lid, or use some kind of sealer to keep excess water from coming out while washing the clothes.

Drill a hole in the center of the top lid

Operating the Bucket Clothes Washer place the bucket with holes inside the bucket without holesFirst, place the bucket with holes inside the bucket without holes.

Next, add a small amount of soap to water at the bottom of the pail. If you are using bleach, be prepared to use less than usual. Make sure the bleach is diluted before adding clothes.

Add garments, plunger, and then fill with water. Leave about 1 1/2 inches free at the top of the pail. This will give some room for bubbles to form and reduce the chances of water leaking out from the bucket top.

(As an aside, the bucket clothes washer is best used outside where there is plenty of room. Water can and will leak out around the rim of the top while clothes are being agitated with the plunger.)

Once you have added the garments, fit the lid of the washer on top, so that the plunger handle fits through the central opening.

Push and pull the plunger vigorously for about 10 minutes.

Empty out soapy water and refill with clean water. bucket washerAgitate garments for another 5 minutes to remove soap and dirt. Empty water, refill, and agitate as many times as needed to remove all soap from your clothes.

Once clothes are clean, remove bucket with holes from the surrounding pail. Take the bucket without holes and push it into the pail with the clothes in order to push as much water out as possible. (Note – place a piece of clean plastic between the clothes and the pail so that you do not get debris on your clean laundry.)

After you have removed as much water as possible from the clothes, hang them up to dry.

Caring for the 5 Gallon Bucket Washer

Store the washer in a clean, dry place. The plunger can be kept inside the bucket and stored as a whole unit. Just make sure that the buckets and plunger are completely dry before putting them away. Even though plastic is not easily ruined by mildew, mold, and fungus, spores can still get onto your clothes during the washing process and wreak havoc.

As a means of prevention, you may also want to rinse the buckets and plunger out with boiling hot water prior to use in order to eliminate risks posed by these noxious fabric killers.

There are many ways to modify the 5 Gallon Clothes Washer to make this chore easier. You can suspend the inner bucket from a tree with a rope, and then spin the bucket in order to remove water from the clothes.

Alternatively, drive a shaft through the bottom of the bucket. Attach a motor to the shaft and simply let the water drain out as the motor spins the bucket. Just make sure that water cannot reach the motor and wreak havoc with it. When making changes to the bucket washer that involve adding electrical devices, always make sure that you have a waterproof chamber for the motor.

Taking the time now to prevent water from draining onto motors can save your life, prevent fires, and reduce the chances of other mischief while you are inventing. It will also be of immense help to shift from plastic tubs to metal or non-flammable tubs, since your experiments can still go awry.

As you may already realize, the washer also uses the same principle as a butter churn. Try sealing the top lid, and then make a waterproof hatch that can be used to add laundry, soap, and water. Next, turn the device on its side and mount on rockers. Since the five gallon bucket washer is fairly small, you may be able to mount it under a rocking chair and relax while you are washing clothes.

For individuals interested in motorized washing machines, once again, create a tub that is waterproof. Next, create an agitator with paddles instead of using the plunger. You can attach a motor to the shaft and then let that agitate the clothes for you.

Next, you can put a center hole in the inner and outer buckets and attach a hose to the hole. Put a valve on the other end of the hose, and then open that to let the water out during the “spin” cycle. This version will work better if you have the buckets in an upright position.

As you prepare for a crisis, it is often hard to think about how life will proceed after the first round of chaos has passed. If society is badly damaged, it may take decades, or even hundreds of years before commercial electricity and equipment becomes available. While many people think they can just “go back to the old ways” it may not be so easy.

When it comes to laundry, you may not be able to wash in a nearby stream simply because so many streams and potable water sources are already polluted with all kinds of toxins. One thing is for certain, if you would not drink the water because of toxins, heavy metals, or pathogens, then you won’t want to wash your clothes in it. From that perspective, being able to wash clothes in a controlled, water efficient, low-tech environment is very important.

The bucket washer may not be complicated, but it will enable you to have clean clothes. You can also modify this design to meet a range of other needs. This may include making variants from other materials to make butter, burnable paper bricks, and even paper for writing.