

WaterAid Nepal

Technical Brief

On Contactless Handwashing Stations



The COVID-19 outbreak has been declared as pandemic which is transmitted to individuals through direct contact with respiratory droplets of an infected person (generated through coughing and sneezing) and can also be infected from touching surfaces contaminated with the virus and touching their eyes, nose and mouth. While COVID-19 spreads rampantly, it is important that local authorities take action to prevent further transmission, reduce the impact of outbreak and support control measures.

Handwashing with soap and water along with other preventative and control health interventions will be helpful to curb the transmission of harmful germs. World Health Organisation (WHO) recommends adopting the habit of maintaining hand hygiene and respiratory hygiene as much as possible to reduce the risk of transmission of dangerous viruses like COVID-19.

As COVID-19 spreads rapidly across the globe and low-income countries like Nepal is at high risk, it is the responsibility of all concerned authorities and agencies working in various geographical areas to act quickly and efficiently on prevention and control. WHO has advised public to take basic protective measures against the spread of new corona virus by simply maintaining hand hygiene as frequently as possible. So, to support easy access on handwashing with soap and water to the public while visiting marketplaces, public places or schools and health care centers, the 'contact less' handwashing station is an appropriate option.

What is Contactless Handwashing Stations?

Contactless handwashing station is a simple mechanism operated by foot, reducing the human hand touch. The user does not have to touch the tap once they have washed their hands.



Why is it a better option?

Contactless Handwashing station saves water and soap. About 0.5 to 2.0 liters of water is consumed for one hand wash and 3ml of liquid soap can be extracted by pumping the soap dispenser twice through the pedal.

The contact less handwashing station is easy to install at public places and helps prevent the spread of corona virus that can be transmitted by touching contaminated taps sometimes. The Installation of such facilities at the strategic locations will be a life saver for people who cannot afford alcohol-based hand rub sanitizer.

How does it work?

It is foot operated with two pedals at the bottom on both sides to get the required amount of water and liquid soap. The water needs to be refilled regularly from other available sources in the tank connected to this facility. The liquid soap needs to be refilled once the soap dispenser is empty. Refilling of the water and liquid soap depends on the numbers of users and the capacity of the water tank and soap dispenser .

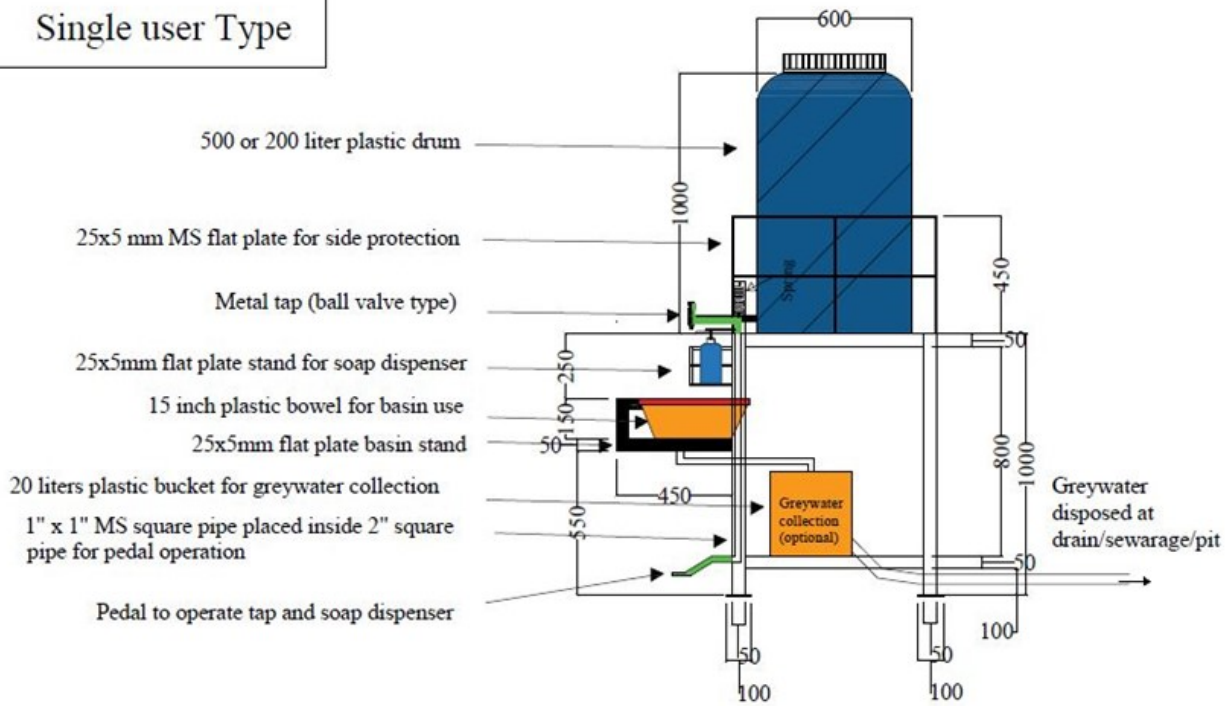
video :

- <https://www.youtube.com/watch?v=nkWLSGcgFnk>
- https://www.youtube.com/watch?v=q4OX_JluXeA

Design and Components of Contactless Handwashing station



Single user Type



Scale: not to scale All dimension in mm

Side View

Water Storage container: It has been assumed that about 600 people will wash their hands per day from one facility, for which 200 to 500 liters container is sufficient (It requires 0.5 to 2.0 litres per person for one time hand wash). Storage size can be increased as per the requirement. If the water is not contamination free, chlorination method can be used. It is desirable to have water with Free Residual Chlorine (FRC) of 0.5 mg/lit which is recommended by WHO (For the effective disinfection of water, there should be a residual concentration of free chlorine of ≥ 0.5 mg/L after at least 30 minutes of contact time at $\text{pH} < 8.0$, WHO 2020.)

Basin/Sink: For comfortable hand washing and to collect greywater safely a 30-centimeter depth and 50-centimeter diameter basin (ceramic or plastic) is fixed at one side of the facility at considerable height with drainage pipe connected between the basin and greywater collection tank placed underneath the facility. The diameter of drainage pipe can be the same (40mm) as that is generally used for bathroom washbasin or sink. The height of the basin can be fixed considering child friendly and disable friendly structure.

Greywater management: A container has to be placed at the lowest level to collect the greywater from the basin which can be disposed safely at a proper place. It is advised to connect the basin drainage pipe directly to the city drainage or sewer system if possible, otherwise a pit needs to be dug at proper distance from the facility to safely manage the greywater.

Tap: Tap needs to be mechanized by pressing the pedal fixed at the bottom of the facility which is easy to press by using minimum muscle power. The tap has to be of a durable metal (low maintenance type) with a ball valve type and which operates by pressing lever up or down.

Liquid Soap and dispenser: Liquid soap has to be placed aside by provisioning pressing mechanism through pedal. The liquid soap dispenser available in the market can be used or pump type hair shampoo bottle can be used. The liquid soap can be locally made by using disinfected water and powder detergent.

Installation

- The handwashing facility can be installed at marketplaces, public affair offices, parks, schools and health care centers where there is regular flow of people. For installation the facility itself requires at least one square meter space and some extra space for people to get in queue to wash their hands.
- The ground in front of handwashing facility has to be marked in circle or square with white paint or white dust powder where possible, so that people can queue in an appropriate fashion to maintain social/physical distancing. A clear message about the social/physical distancing should be displayed on the water container at appropriate height in visible bold letters.
- Numbering of the contactless handwashing stations will be helpful for the organization/authority managing a large number of handwashing facilities to identify and respond to problems. A 'hotline' number displayed on the water container will be helpful to the people to report, if there is any problem with the handwashing station.

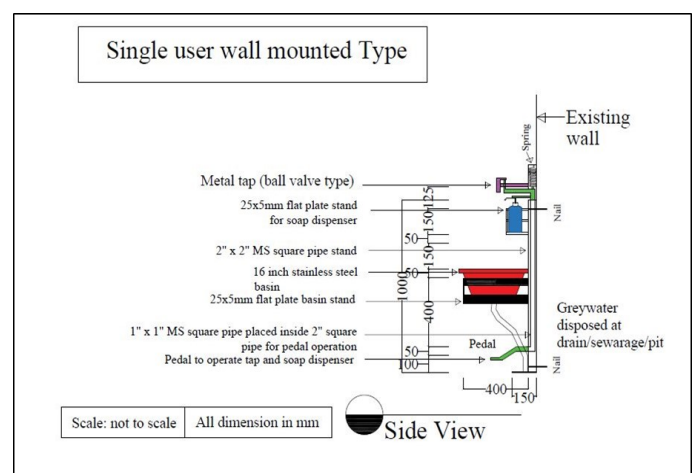
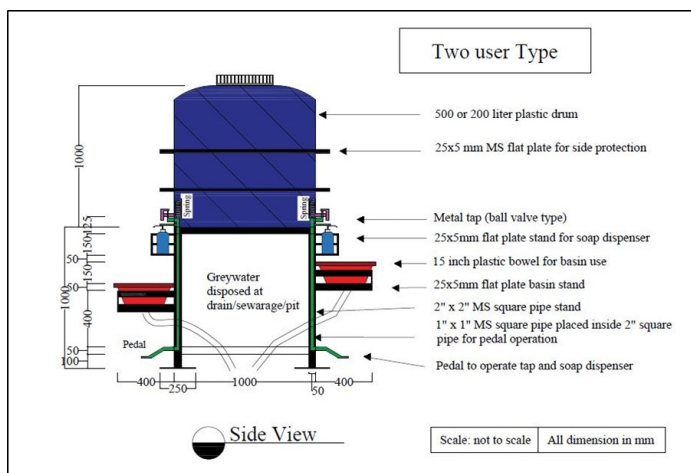


Operation, Management and monitoring:

- Container need to be filled each day depending on the quantity of water consumptions and user numbers. Water must be free of contamination (Ensure WHO standards are met for water quality - FRC \geq 0.5mg/L must be maintained with contact period of at least 30 minutes before allowing it to use for handwashing purposes).
- Availability of liquid soap needs to be ensured. Daily check of the facility to refill the soap and water container is suggested.
- Greywater needs to be properly disposed in city open drain or underground sewer system or in open pit considering there will be no risk to harm human or animals.
- Oil-up/greasing at the lever, spring, joints, hinges on a weekly basis is required for efficient working conditions.
- When commissioning the handwashing facility, it must be clear which organisation or authority is responsible to manage it, and that the requirements for operation & maintenance have been explained.
- Entire hand washing facility components have to be cleaned thoroughly with disinfectant or 0.1% chlorine solution on a daily basis if possible, otherwise weekly basis is strongly recommended. The water tank should also be cleaned thoroughly. For disinfectants product available in Nepal, please click the link. <https://bit.ly/3ew9hvd>
- Stock enough disinfectant solution and use it when needed. The disinfectants can be prepared by following the steps recommended by WHO and CDC given in the link below:

1. WHO recommendation - <https://www.who.int/ihp/publications/Annex7.pdf?ua=1>
2. CDC recommendation for 0.5% strong chlorine solution from 70% HTH chlorine - <https://www.cdc.gov/vhf/ebola/pdf/cleaning-hand-washing-with-chlorine-powder.pdf>
3. CDC recommendation for 0.05% mild chlorine solution from 70% HTH chlorine - <https://www.cdc.gov/vhf/ebola/pdf/chlorine-solution-liquid-mild.pdf>

Few More Designs



For more detail please contact:

Binesh Roy – FCP Technical Manager- bineshroy@wateraid.org

Sonu Kumar Shah – Senior WASH and Technical Coordinator- sonukumarshah@wateraid.org