MACALESTER

Switch-Adapted Water Gun

USER GUIDE

Overview

This document contains the necessary information to use the Switch-Adapted Water Gun. This playful, fun, accessible device that allows users with limited control to activate a stand-alone water gun using a 3.5mm input for an adaptive switch and an optional supportive stand.

Figure 1: Picture of our switch-adapted water gun with buttons and stand setup

Contents

Introduction

Originally a battery-powered shark-themed toy, this water gun has been modified so that the internal trigger circuit can also be activated through an adaptive switch. A custom 3D-printed base allows the device to be used hands-free, making it ideal for individuals with motor impairments. The setup encourages inclusive participation in sensory activities, outdoor play, or assistive technology demonstrations. This comes with a modified shark-themed water gun with a 3.5mm mono jack, a rechargeable AA battery (pre-installed), a USB charging cable, a 3D-printed PLA stand with a wooden base, a rubber band for barrel retention, an O-ring that keeps the water tank connect to the water gun.

Files available at: https://github.com/Audrey-Smyczek/WaterGunDocumentation

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Features

1. Shark Design: A bold, playful shark theme enhances visual engagement and makes the device fun and approachable for all users.
2. 3.5mm Mono Jack: Compatible with standard adaptive switches, allowing for accessible activation via button, pedal, or alternative input.
3. Hands-Free Operation: A Custom 3D-printed stand securely holds the water gun, removing the need for users to lift or grip the device.
4. 360° Swivel Mount: Stand is attached to a wooden base with a central pivot screw, allowing users or assistants to rotate the water gun freely for targeting.
5. Detachable Base: The water gun can be easily removed from the stand for traditional handheld use.
6. Dual Activation Modes: These can be activated using the built-in trigger or an external 3.5mm switch for flexible use scenarios.
7. Stand Stabilizers: Rear restraints and a front rubber band attachment ensure the water tank and gun stay firmly in place during operation.
8. Battery Powered: Operates with one AA battery; no manual pumping is required for water flow.

Specifications

Item	<Device Name>
Size (Length x Width x Height) [mm]	200 x 170 x 220 mm
Mass [lbs]	4.5 lbs, including gun, stand, and full tank
Switch Type	3.5 mm mono adaptive switch
Power Source	1 x AA battery
Printed Material	PLA plastic
Print Time for Stand	4 hours
Activation Method	Trigger and/or external switch

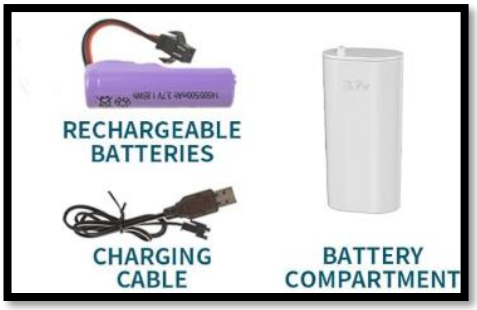
Compatibility

The Switch-Adapted Water Gun is compatible with any standard 3.5mm mono adaptive switch. For example, the intended switch is a button switch. The water gun retains the original trigger regardless of whether the switch is plugged in.

Charging

Unplug the battery compartment and disconnect the rechargeable battery to charge the device. Then:

1. Plug the USB charging cable into a wall adapter or USB power source.
2. Connect the rechargeable battery to the USB charging cable.
3. Once fully charged, reconnect the battery inside the water gun and secure the compartment.



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Usage

Initial Setup

1. Use a small screwdriver to open the battery compartment.
2. Insert the rechargeable battery and connect it to the input terminal in the transparent battery housing.
   (Insert picture of battery here)
3. Ensure the battery is securely connected, then close the compartment and screw it shut.
4. Plug a 3.5mm adaptive switch into the jack on the side of the water gun.
5. Fill the rear tank with clean water and twist it into place until it locks securely.
6. Mount the water gun in the 3D-printed stand:
   - Align the barrel with the front and secure it using a rubber band.
   - Ensure the rear water tank rests snugly between the two wooden support blocks on the base.

Regular Use

Once set up, the user can activate the water gun in either of two ways:

1. Manuel Trigger - Squeeze the built-in trigger by hand
2. Adaptive Switch – Press the switch connect to the 3.5 mm input

The user can rotate the base of the gun around the wooden base for 360° aiming.

Takedown / Storage

1. Turn off or unplug the adaptive switch.
2. Remove and empty the water tank.
3. Disconnect the battery if storing for long periods.
4. Wipe down the device and ensure all components are dry.
5. Store the switch-adapted water gun in a cool, dry place away from direct sunlight to avoid heat damage or PLA warping.

Care

The Switch-Adapted Water Gun is made of 3D-printed PLA plastic. Exposure to high heat or direct sunlight may cause the plastic to warp or degrade over time. Store in a cool, dry environment when not in use. This device contains electronic components and is not waterproof. If the gun or battery area becomes wet:

1. Disconnect the battery and switch immediately.
2. Allow the device to fully dry before using it again. You may open the battery compartment to speed up drying

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Cleaning

Warning: Never submerge the whole device in water. The electronics inside the gun and battery housing are not waterproof and must stay dry. . Do not use hot water or place any parts in a dishwasher, as this may damage the plastic.

The Switch-Adapted Water Gun can be cleaned using the following steps:

1. Wipe down the gun's exterior and stand with a damp cloth to remove dirt or residue.
2. The water tank can be washed with warm water and mild dish soap. Rinse thoroughly before reattaching

If deeper cleaning is required:

1. Remove the battery and disconnect any electronic components.
2. Gently scrub non-electronic parts by hand with a soft sponge.
3. Allow all parts to dry completely before reassembly.

Disposal

To responsibly dispose of the Switch-Adapted Water Gun, follow these steps to separate recyclable, compostable, and electronic components.

- PLA Plastic Parts: If available industrial composting for PLA, else recycle
- Wood Components: Recycle
- Electronics (Adaptive switch jack, wiring, and internal circuitry): E-Waste
- Batteries: Recycled at a battery disposal
- Screws and metal fasteners: Recycled with metals.
- Rubber bands and other material: General waste