Switch Adapted Nerf Gun
DESIGN RATIONALE

Introduction

The Switch Adapted Nerf Gun is designed to be a switch adapted toy for an older audience. The majority of switch adapted toys are designed for a younger audience, so this project aims to adapt a toy aimed at older children and make it switch accessible.

Research

Commercial			
Name	Image	Price	Link
Switch Adapted modified Dart Blaster. For special needs.		$99.74	Link
Dart Gun – Switch Adapted		$70	Link

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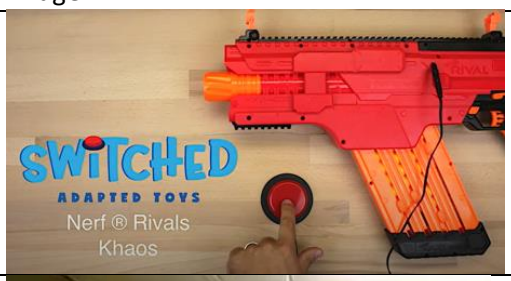
Switch Adapted NERF Rhino-Fire Elite foam dart gun		Price available upon email request	Link
DIY			
Name	Image	Price	Link
SWITCHED Adapted Toys - Nerf Rivals Khaos - Manual		Unavailable	Link
IATP- Switch adapted Nerf gun		Unavailable	Link

Requirements

Goals

G01	Allow a nerf gun to be operated by an accessible switch

Functional Requirements

F01	Add a mono jack to allow the primary user to control the feed motor
F02	Add a toggle switch to allow the secondary user to toggle the flywheel motor
F03	Add a stand that allows the gun to standalone on a surface and be mounted on a ¼-20 UNC system

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Makers Making Change
A Neil Squire Program

Non-functional Requirement

NF01	Add a second mono jack to allow the primary user to operate the flywheel motor.

Constraints

C01	Design must still allow the gun to be used normally

Prototyping

When opening the gun, the circuit was found to be different from the circuit in the gun in the tutorial video. Minor changes to the procedure had to be made to adapt the feed motor trigger.

Testing

The successfully adapted toy was tested with a standard 3.5 mm switch using both the desk stand and the ¼-20 bolt stand. The gun was able to stand and support itself firing with both stands.

Opportunities for Improvement

Once the control circuit is better understood, a 3.5 mm jack can be put in parallel with the toggle switch to make the flywheel motor usable by the primary user.

A system could be constructed to trigger both motors on the same switch, with a roughly one second delay on the feed motor to allow the firing motor to get up to speed.