

Tennis Ball Launcher

Design & Construction, v1.21

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The licensee is responsible to follow proper safety precautions when working with tools, equipment, and machinery.

3. Revision History

The table below lists all document revisions:

Rev.	Date	Description
1.21	10/26/14	Expanded table of contents
1.2	9/13/14	Corrected ball-speed error
1.1	4/6/14	Added detailed descriptions plus color photos
1.0	6/7/04	Initial baseline version

4. Introduction

This manual describes the tennis ball launcher and contains details regarding design, construction, and assembly.



Floor-stand



Table-top

The launcher consists of heavy-duty steel frame construction. It features swivel head (floor-stand model only), adjustable launch angle (floor-stand model only), dual drive motors, ball-feed mechanism, and durable 8" wheels, each with puncture-proof rubber treads and plastic hub. The 24 VDC motors are capable of 60+ MPH ball speeds.

Note: The design manual covers only the floor-stand model.

5. Specifications

This section summarizes drive information, dimensions, and capacities for the tennis ball launcher.

- Measures 21"L x 21"W x 40"H
- Weighs 20 lbs
- Steel frame construction
- 8" solid rubber wheels
- Dual 12 / 24VDC motors
- Max ball speed 60+ MPH

Note: The launcher requires a 24 VDC power source, but can also be operated at 12VDC.

6. Special Considerations

Applicability:

The launcher exists in two models: floor-stand and table-top. This manual covers only the floor-stand model.

Ball-feed:

The ball-feed mechanism utilizes a hobby RC servo motor for feed activation. While this document describes mechanical installation and assembly of the mechanism, it does not describe servo wiring and control considerations. RC servos require a special electronics interface that is beyond the scope of this manual.

In the interest of demonstrating your completed launcher, you may wish to obtain a RC servo tester (pictured below). This device will allow you to manually operate the servo by rotating a knob on the tester. These devices are available from a number of retail suppliers including RC hobby stores and independent outlets, some costing as little as \$10. (Servo testers require a suitable power source, typically 4.8VDC to 6VDC. Consult the retail supplier and/or appropriate documentation for details.)



RC Servo Tester

7. Parts List

The following tables contain part information associated with the tennis ball launcher. This information lists suppliers, required quantities, part numbers, approximate cost, and descriptions. (In some instances a part number is not provided. These items are commonly available in many hardware and home improvement stores.) You will also find notes which describe how the part is used and any special considerations.

While every effort has been made to provide reliable data, we cannot guarantee the information's accuracy since suppliers frequently change their inventory without notice. We cannot assume responsibility for modified pricing, stock issues, or discontinued parts. If you encounter difficulty locating a part, contact us at support@kadtronix.com and we will do our best to suggest an alternate supplier, if possible.

Note: The parts list is not included in this preview.

8. Before You Begin

This project requires medium to advanced experience with mechanical assembly and fabrication. While expert skill is not required, the novice might find portions of the project somewhat challenging and should seek appropriate assistance whenever as necessary.

Prior to beginning construction, you are advised to carefully review the entire document to become thoroughly familiar with the project. This is the time to assess your skills and to determine where you might encounter difficulty. This is also the time to take inventory of your tools and parts. There's little more frustrating than beginning a project and discovering you cannot complete it because of a critical missing item.

Project build time will vary and depends on available tools and your experience level. Roughly speaking, you should be able to complete the mechanical assembly in about 5 to 10 hours. This estimate assumes an average mechanical ability and a standard set of tools as listed below.

Before beginning this project, refer to the parts lists provided earlier. Make sure you have all the required items handy. Use proper care and patience at all times. Drilling an improperly sized hole or making a miscalculated cut could result in damaged parts and ruin the project. Read through all the instructions in this manual carefully before beginning.

Caution: Be sure to follow proper safety procedures at all times. And always use protective eye wear.

The following tools are needed for construction and assembly of this project:

- Power drill plus bits (1/8", 1/4", 5/16")
- Wrench
- Pliers
- Vice-grip locking pliers
- Wire cutters / strippers
- Screwdrivers: Philips and flat-blade
- Scissors or shears
- Hacksaw
- File

Additional items you may wish to have on hand include the following:

- Masking tape