



# ***Laser Stakes***

Laser Positioning System  
For Barrels and Poles

User's Manual

## Installation Overview

Laser Stakes mount in the ceiling of your arena to mark barrel, pole and electric eye positions with a beam of light. This permanent solution to marking pattern positions makes each setup fast, easy and accurate. Without stakes in the ground, arena drags are quicker and more effective – especially immediately around each barrel and pole.

### Wiring

Power for all lasers is provided by a single AC adapter. Low voltage DC power runs from the AC adapter to the first laser, from the first laser to the second laser, from the second laser to the third laser, etc. For more complex configurations, wiring can “T” off from any laser to start a separate run. The illustration below shows a typical wiring run for a combined barrel and pole pattern.

Connections are made with an easy to use terminal block. Each terminal block provides positions for an incoming wire pair and an outgoing wire pair to the next laser. To make wiring simple, the connections are polarity-independent so you don't have to worry about mixing up positive and negative conductors

18 gauge, two conductor speaker wire or lamp wire should be used for wiring. This wire is available in various lengths at Home Depot and Lowes.

The lasers turn on as soon as the AC adapter is plugged in. A switched AC outlet or a power strip makes it easier to turn the lasers on and off.

Alternatively, remote control AC switches are readily available at Home Depot, Lowes, Walmart, etc., that can be used to turn an AC outlet on and off via remote control.

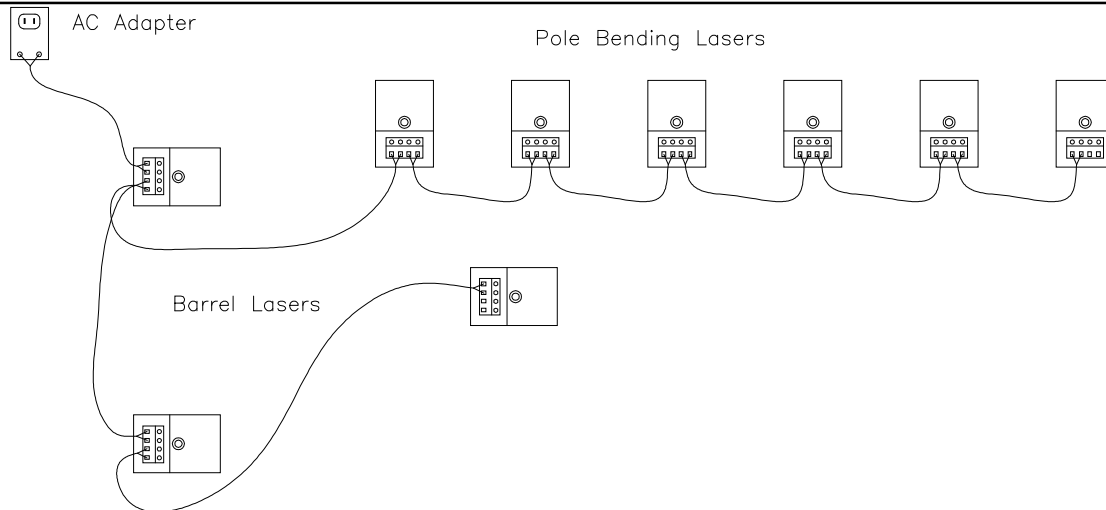
If desired, additional AC adapters can be used to provide independent on/off control for groups of lasers (e.g., a barrel group, a poles group).

### Laser Locations

Each laser easily attaches to a roof support with a strong magnet. An adjustable ball-head mechanism allows you to aim each laser precisely at its target.

Choose the location in the ceiling where each laser will be mounted. For best positioning accuracy, the laser should be mounted as directly above the target as possible. However, you will be able to adjust the final aim of the laser after it is mounted.

A flat metal surface to which the magnet can attach is required at the locations chosen to mount the lasers. Other mounting options are available if required – contact us.



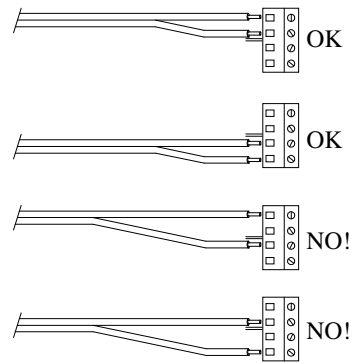
Typical Wiring Example

## Installation Guidelines

After planning of your installation is complete, install the wiring and the lasers. Note these important guidelines:

- Leave about one foot of extra wire coming into and leaving from each laser location.
- Strip about ¼” of insulation from the wire ends for proper installation into the terminal blocks.
- The terminal block is divided into an IN pair of contacts and an OUT pair of contacts. The two IN contacts are electrically equivalent to the two OUT contacts, so it does not really matter which wire pair is connected to the the IN contacts and which pair is connected to the OUT contacts.
- Wire pairs are polarity independent – the conductors can be swapped either way within the IN pair or within the OUT pair of contacts.
- Wire pairs must be connected to either the IN pair of contacts or the OUT pair of contacts. A wire pair must *never* be split across an IN contact and an OUT contact (see illustration on the right).
- More than one wire pair can be connected to a pair of terminal contacts. See the “Typical Wiring Example” where the wire run for the pole lasers T’s off from the first barrel laser.

- To prevent possible damage, do not plug the AC adapter into an outlet until all wiring is complete and checked.
- If you want to check a section of lasers before all lasers are wired, make sure there are no sections of unterminated wires connected to any laser that might accidentally cause a short.
- Complete the installation by aiming each laser exactly at the desired position for each barrel, pole, etc., and tightening the adjustment knob.



## Maintenance and Troubleshooting

### Remove AC Power When Not In Use

When not in use, unplug the AC adapter from the 120 volt outlet (or cut power to the outlet). This extends the life of the lasers and the AC adapter.

### AC Adapter Voltage Check

If none of the lasers are coming on, use a volt meter to verify 12 volts is present across the screw terminals on the AC adapter when plugged into AC power. If not, unplug the AC adapter, remove the wires from the screw terminals, plug the AC adapter back into the outlet, and test for 12 volts again. If 12 volts is present after removing the wires, there is probably a wiring short in the low voltage wiring between the lasers.