



Electronic Measurement in the Horizontal Jumps

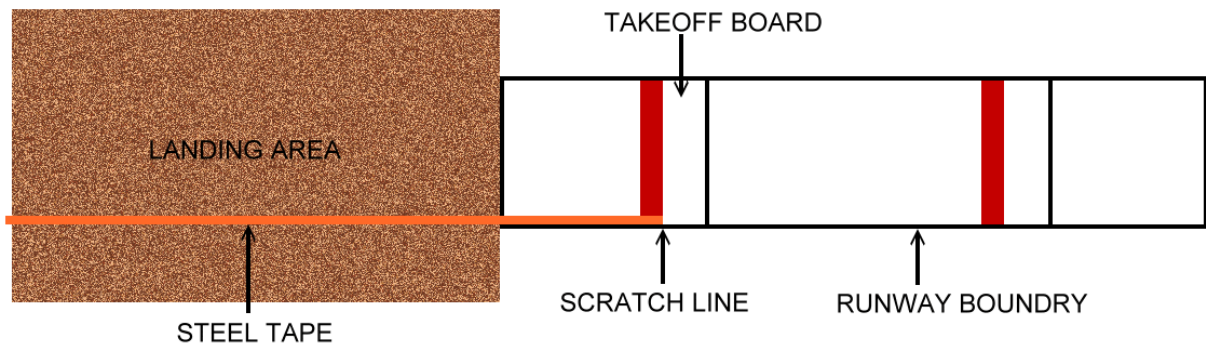
**Mark Heckel, Master Official
Three Rivers Association, USA Track & Field**

**448 Dogwood Lane
Hughesville, PA 17737
mheckel@windstream.net
570.584.3128**

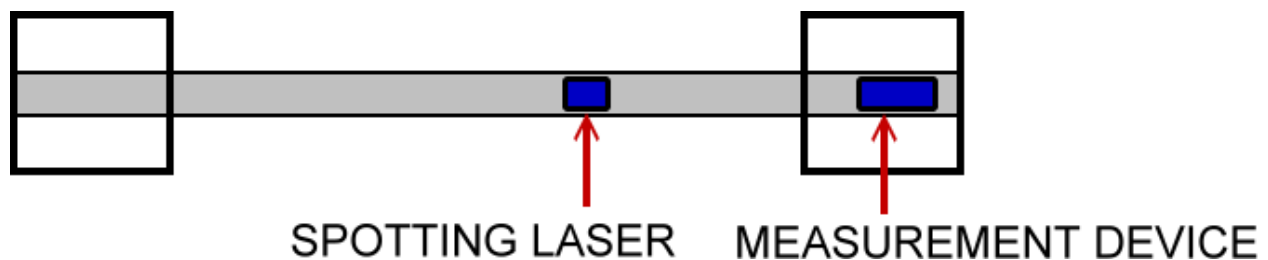
I. Basic setup of the beam

You can use a standard, certified steel tape to create the baseline for your setup. In the illustration below, the steel tape is laid perpendicular to the scratch line of the take-off board. To ensure that it is perpendicular, we use the lane boundary line. Since the take-off board must be perpendicular to the lane boundary line, this serves as a guide for alignment.

We place the "0" end of the tape at the scratch line, and extend it into the pit (preferably through the pit) to a distance that is approximately the length of the longest anticipated jump.

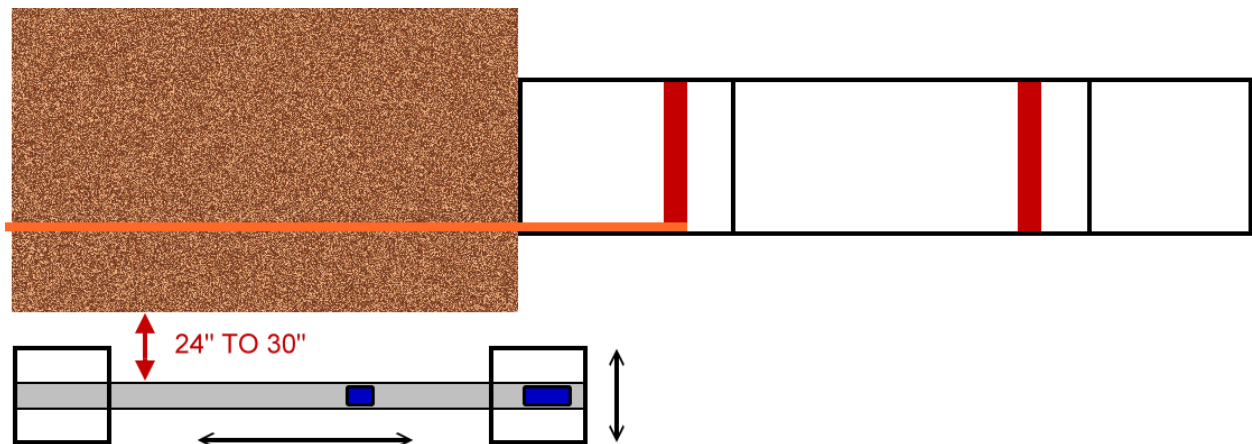


Next, we set up the beam that will be holding both the spotting laser and the reading device. Attach the reading device securely near the end of the beam that is closest to the takeoff board. Attach the spotting laser to the trolley that will move along the beam. Be sure to use a lubricant that is workable on the beam so that the trolley slides easily from one end to the other.



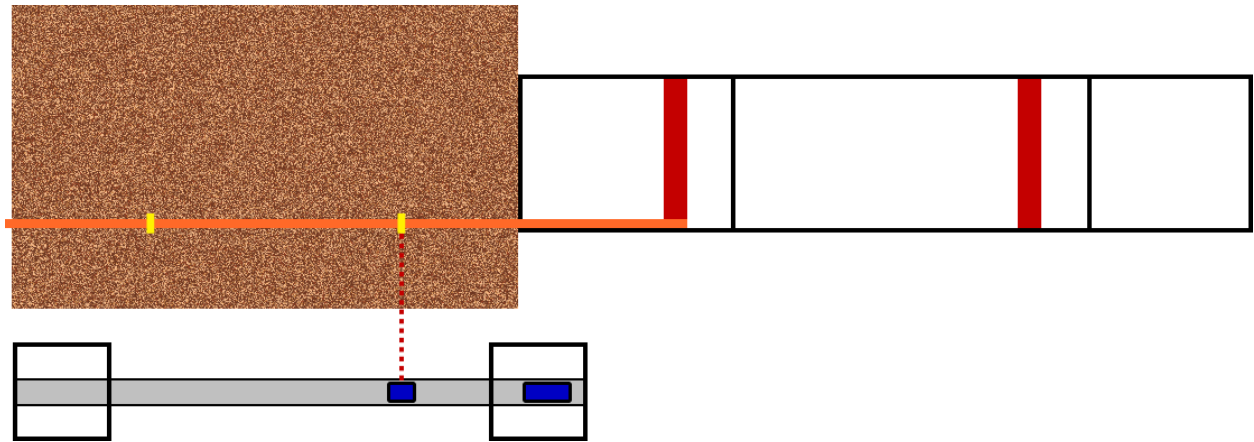
When you are setting up the beam, ideally, it should allow for the spotting laser to be able to travel as far back as the leading edge of the pit nearest to the take-off board. Since any attempt in which the athlete makes the land area, without otherwise committing a foul, is considered a legal attempt, it must be measured. If the spotting laser cannot be pulled back far enough (close enough) to the edge of the pit, an alternative method of measurement will be required for those jumps.

In general, the beam should be level both in the direction of the landing area, and perpendicular to the landing area. It should be placed a minimum of 24" to 30" from the nearest edge of the landing area. You may need to use shims to level the beam, or the built in leveling mechanism on the beam. In addition, you may need sandbags or other stable weight to keep the bases from shifting.



Once the beam has been placed and leveled, you should take at least two (2) sample measurements to calibrate the measuring device. It is recommended that these two measurements be around the minimum and maximum distances that are anticipated during the competition.

Using the already in place steel tape, align the marking stake at one of the marks. Note the distance on the steel tape (for example, 4.50m). Using the spotting laser, align it with the edge of the white stripe on the marking stake that is closest to the take-off board.



Calibrating the measurement device



These instructions are based on using the Leica Disto A5; however, the process is essentially the same on all Leica units.

Turn the unit on by pressing the On/Dist key.



Press the **Menu** button. You will see **Unit** on the flashing screen. Press the button again until **Offset** appears on the screen.



Press the = key. The screen will display the current offset. Using the + and – keys, reset the offset to 0.000m. Press the = key to confirm the offset is set to 0.000m.



With the spotting laser still on the check mark, press the **On/Dist** key. The measurement from the end of the measuring device nearest the scratch line to the spotting laser will appear. (For example, the distance may appear as 3.500m). Since the marker rod is at 4.50m, we need to set the offset to 1.000m.

Repeat the process of accessing the **Offset** menu.

This time, use the + and – keys to set the offset at 1.000m.



Press the = key to confirm the offset and lock it in.

Without moving the spotting laser, press the **On/Dist** key to take another measurement. The new distance on the screen should now read approximately 4.500m. Remember that the last digit to the right is ignored when reading the measurement. A reading of 4.508m would be 4.50m.

Move the spotting laser to the second checkmark, read and verify the distance.

As an in-event checkmark, pick a distance that you can quickly move the spotting laser to. Place a small marker, such as a small piece of tape, on the ground outside the landing area that will not be disturbed. This can serve as a checkmark during the competition.

Record this distance on a separate sheet of paper. Between flights or between trials and finals, you can move to the check mark and verify that the beam has not moved.

Measuring the landing mark

1. Once the athlete has exited the pit, insert the stake into the sand. Make sure the stake is placed so the middle of the white tape is inside the depression made by the jumper, rather than in front of the depression. The tape must be on the side facing the guide rail.
2. Slide the scope carriage down the rail until the spotting scope beam is aligned with the edge nearest the take-off board of the white line on the stake. Once it is aligned, step back from the rail.
3. Record the distance with the measuring laser. Press the **On/Dist** button to turn the laser on.
4. The screen will display three hashes, signifying the laser is on and ready to take a measurement.



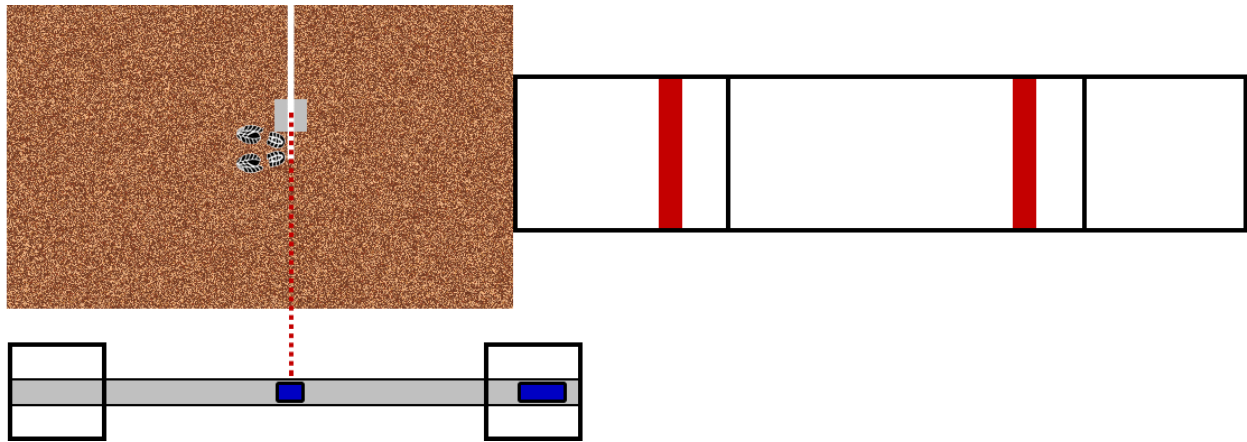
5. Press the **On/Dist** button again to take a measurement.



6. Press the **On/Dist** button again to reset the laser but keep the measurement on screen.



7. Press the **On/Dist** button again to record the next measurement.
8. If you continue to take measurements by pressing the **On/Dist** button and do not press the **Clear/Off** button in between, the device will display the previous three measurements taken.



When the competition is over

Even though you have periodically checked your check mark, you should repeat the process that you used in setting up. Run the steel tape out parallel to the lane boundary, and measure the same points that you measured during the setup process. Your measurements should match.

Notes:

- Be sure to have a couple of towels available to cover the spotting laser and the measuring device between rounds, especially in wet or sunny conditions.
- You will also need some type of lubricant for the beam. Depending on its material makeup, silicon or WD-40 will work very well.
- You may need to periodically wipe down the beam, as sand and grit will tend to accumulate on it.
- Green lasers work best for outdoor competition, while red lasers tend to work best for indoor competition.
- Have a tablet or small notebook to record your setup measurements and your checkmark measurement.
- A small torpedo level should be part of your kit to check the level of the beam.
- Have some wood shims in case they are needed to level the beam.
- A steel tape of at least 25' (long jump) or 50' (triple jump) should be used. Normally, these are part of the horizontal events crew bag.