# Laser Measuring for Long Jump and Shot Put
# Using the Bosch GLM 20

**Safety First**: DO NOT POINT THE LASER BEAM AT ANY LIVING CREATURE. THIS COULD BLIND THEM. PLEASE KEEP THE LASER BEAM/DOT OFF WHILE NOT MEASURING AS YOU MAY INADVERTENTLY POINT IT AS SOMEONE. THEY WILL NOT BE PLEASED. KEEPING IT POINTED TO THE GROUND WHILE NOT IN USE IS A GOOD PRACTICE.

**WEATHER PROOF:** THESE DEVICES AREN'T OVERLY GOOD AT KEEPING THE WEATHER OUT. IF LEFT OUT IN THE DIRECT SUN THEY WILL OVERHEAT AND TURN OFF. WHEN NOT TAKING A MEASUREMENT TURN THEM AWAY FROM THE SUN. THE RAIN WILL PROBABLY HAVE SOME EFFECT ON THEM, USE A LIGHT SANDWICH BAGGIE TO WRAP THEM IN THE RAIN.

The following instructions are for BCA Officials and Volunteers who will be using the Bosch laser measuring devices in LJ and SP. There are two components to the laser measuring system for LJ and SP. The Bosch Laser Measuring Device and the measuring reflector marking pole.

## Basic Instructions on using the Bosch GLM 20 Measuring Unit

- The Bosch GLM 20 is powered by 2 AAA batteries. Access is on the opposite side of the white triangle. NOTE: Take the batteries out when not in use for extended periods.
- The GLM 20 measures from the bottom of the unit
- To turn the unit on and off, press the white triangle. If you press and hold the triangle the device will change from metric to imperial. Let go of the triangle when it gets to "M"
- The laser beam/dot is turned on when the flower looking thing is flashing. (DO NOT POINT THIS AT ANYBODY.)
- To record a measurement once the laser dot is in the correct position, push the white triangle. The flower will stop flashing and "Hold" will appear at the top of the screen. The prior measurement will be shown above the current measurement. The laser beam will be turned off.

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## Before the Meet Starts for Long Jump

1. Place the measuring device with the metal positioning pieces butting up against the take off board that's closest to the pit. Adjust the positioning pieces down or up as needed by loosening the screws and rotating the pieces. Nothing but the positioning pieces should be touching the take-off or toe board.
2. Push the white triangle turning on the device.
3. Place the measuring reflector pole in the pit close to the take-off board. (The rule book states t*he sand in the pit should be level with the runway. If it's not level then you'll have problems finding the laser dot on the measuring pole.)* Note the height of the laser dot on the reflector plate.
4. Move the pole to the middle of the pit and note the height of the dot again. Adjust the leveling bolts up or down as required to make the height of the dot the same while keeping the device from rocking about. Tighten the wing nuts but don't overtighten them.
5. To check the accuracy, place the reflector pole 1 or 2 meters into the pit.
6. Place the unit against the take-off board and measure the distance using the steps above for the LJ unit. Then,
7. Measure the distance with an accurate tape measure, preferably steel.
8. If there is a discrepancy, loosen the tightening screw on the side of the holder and move the Bosch measuring device forwards or backwards the desired amount using the adjusting screw and check again.

## Bosch GLM 20 Laser Measuring Device for LJ/TJ

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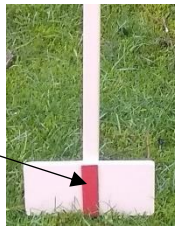
## To Measure Long Jump Attempt

1. At approximately a right angle to where the attempt is going to be measured from, place the device with the metal positioning pieces butting up against the front of the take-off board (TOB) closest to the pit.
2. Press the white triangle on the device, the flashing flower will appear on the screen and you should see the red laser beam/dot on the measuring pole.
3. Once the measuring pole is correctly positioned, (see below for instructions,) adjust the laser device along the slider rod until the beam is in the middle of the red reflective tape and then press the white triangle. A "HOLD" will appear on the screen, the laser beam/dot will turn off and the distance will be stored on the screen.
4. The measurement is listed in meters to 3 decimal places, just read the first 2 decimals. The device will store this data in memory until another measurement overwrites it.
5. Call out the measurement and start at step 1 again once the next attempt is completed.
6. Do not push the white triangle until you're at step 2 as it will power up the laser beam/dot and you may point it at someone inadvertently.

### Using the Measuring Reflector Marking Pole Correctly for both LJ/TJ and SP

The Measuring Reflector Marking Pole is made up of 3 separate pieces that are required for its function. Reflective plate, sighting unit and level bubble. In order to accurately measure an attempted, the following procedures must be followed.




1. Take the pole to the mark left by the athlete/implement and put the front of the reflective plate, (side with red reflective tape,) at the spot that is closest to the take-off board or circle.
2. Site along the siting unit and point it to the laser measuring device. This will put the reflective tape square to the laser measuring device. Make sure the marking plate is still in the correct position.
3. For LJ, the wing on the front of the reflective plate should be flat on the sand.
4. Now stand very still, center the bubble in the level and let the official using the laser measuring device know all is ready to be measured.
5. Once the measurement has been called out you may exit the area.

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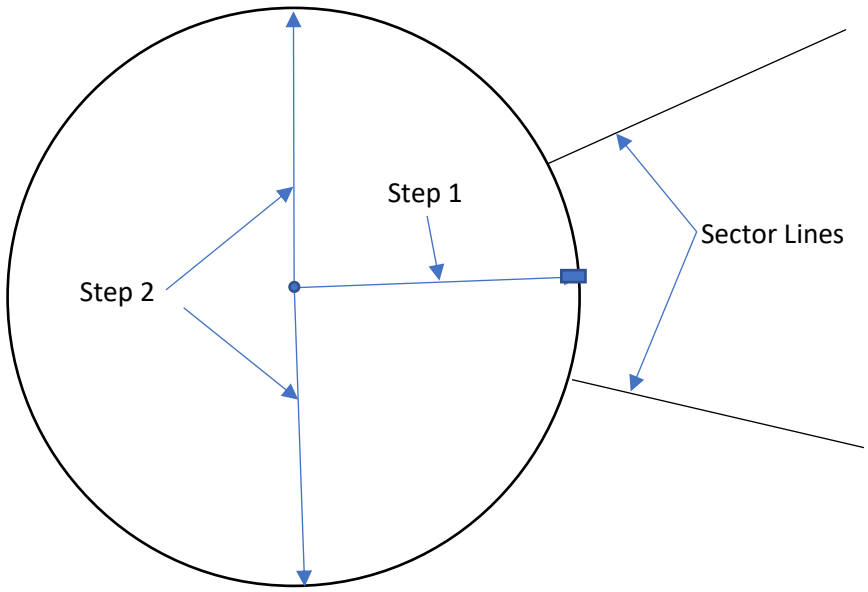
### Finding the Center of the Shot-Put Circle and

### Setting the Height on the Reflector Pole Before the Meet

Many throwing circles will not have the center of the circle clearly marked. The radius of a Shot-Put throwing circle is 1.068 Meters. An easy way to find the radius/center so you can place the measuring device threaded rod in the correct position to measure is the following:

1. Place the measuring device on the toe board in in the middle of the sector lines pointing straight out to the middle of the sector.
2. With a tape measure, mark the radius from each side of the circle 1.068M to the threaded rod on the measuring device. (Circles aren't exactly round so don't be shocked when you have to add or subtract a bit to get the bolt in the middle.)
3. Mark the area around the rod with paint/felt pen, whatever works best for you so it's easily seen for the rest of the day.
4. Now take the reflector pole and place it close to the toe board, turn on the measuring device with the white triangle and note the height of the laser dot on the reflector.
5. Next move the reflector pole out several meters and note if the dot move up or down on the reflector. Adjust the adjusting rod using the adjusting nut and wing nut so the laser dot is in approximately the same position. Tighten the wing nut so it stays the same height throughout the day
6. Repeat step 5 on various parts of the sector to make sure the dot will show up on the reflector in all areas. (Some venues may not have level landing areas so you may have to play with the adjustments.)
7. Now do a test measurement by placing the pole out a couple meters and then check the measurement of the laser device with a steel tape. If there is a discrepancy, loosen the tightening screw on the side and move the Bosch measuring device forwards or backwards the desired amount using the adjusting screw and check again.



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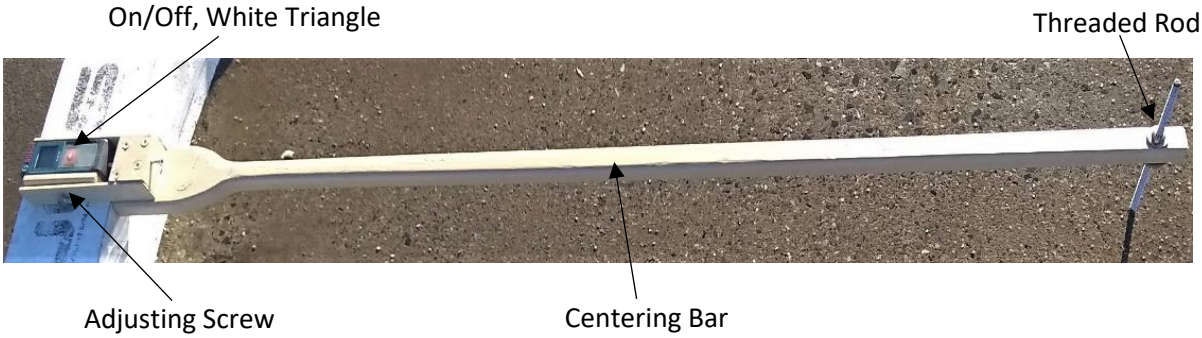
**To Measure Shot Put Attempt:**




1. Place the device on the top of the toe board, as shown above, with the metal threaded rod on the center of the circle and the centering bar butted up against the toe board.
2. Press the white triangle on the device so there's a flashing flower.
3. Once the measuring pole is correctly positioned rotate the measuring device, from the center of the circle so the laser beam/dot is on the red reflective tape of the measuring pole
4. While holding the device firmly against the toe board, press the white triangle. A "HOLD" will appear on the screen, the laser beam will turn off and the distance will be stored on the screen.
5. The measurement is listed to 3 decimal places, just read the first 2 decimals. The device will keep this data in memory until another measurement overwrites it.
6. Call out the measurement and start at 1 again once the next attempt is completed.
7. Do not push the white triangle until you're at step 2 as it will power up the laser beam and you may point it at someone inadvertently.