

Laser Rock Measure (LRM)

Background

Frequently during curling matches it is necessary to determine which curling stone (or rock) is closest to the centre of the house which is referred to as the button.

The traditional method of measurement uses a mechanical frame (see figure 1) with an adjustable sliding arrangement at one end and a pointed rod at the other which is placed in a metal insert located in the ice at the dead centre of the house, called the pin. A sliding mechanism on the frame is positioned close to the rock and uses a vertical arm and a dial gauge to indicate a relative distance of the rock from the centre of the button.

This measuring equipment provides only a comparative distance from the pin for 2 or more rocks in play, but not the absolute distance between the pin and the rocks.



Figure 1: Comparative Rock measuring device

The Challenge

In recent years, it has become common during competitive curling events to have the competitors throw one rock to the button before the start of the competition or each game. It is necessary to record the distances of such rocks from the pin and use these measurements to determine choices such as rock selection and/or which team has the initial advantage of "the hammer"; i.e., the option to throw last rock.

Currently, a device which uses a digital readout tape measure (see figure 2) is used for "rock to the button" measurements. The operation of this device often requires two people, one to hold the tape against the rock to be measured and a second to take the reading on the digital tape measure. Used this way the device provides accurate measurements with the exception that when the rock being measured is quite close to the pin the tape travel is very short which leads to less accurate results.



Figure 2: Rock to button measuring device

In order to fairly judge which rock is closest to the button, several factors must be considered:

- It is important that the rocks are not moved during the measurement procedure.
- There is always a metal insert at the centre of the house (the pin) which is used as the reference point for the measurement.
- The measuring device should be capable of accurately measuring rocks that are very close to the button.
- There are no current measuring devices that can measure when the rock covers the pin.

The Innovation

A new device, the Laser Rock Measure (LRM) has been invented to provide a quick and simple method of determining how far a rock is from the pin. The device (Figures 3 & 4) uses a laser measuring tool to provide an accurate measurement of the distance a rock is from the pin. Only one official is needed to make the measurements.

Since there is no need to physically touch the measured rock, there is no danger the rock will be moved during the measurement.



Figure 3: Laser Rock Measure (LRM)

As can be seen in Figure 3 the laser measuring tool is set back from a pointed set screw that rests in the pin at the centre of the button. This set-back permits accurate measurement of rocks that are virtually over the pin. The distance from the centre of the pin to the laser measuring device is a constant for all measurements and therefore does not compromise any comparison of rock distance to the button determinations.

The invention includes a flat ABS plastic base plate with a pointed adjustable bolt on one end. A laser measuring device is mounted on a raised mounting block with the laser pointing toward the set screw.

Our Technology

In operation, the pointed set screw is positioned in the pin. The set screw is adjusted until there is no slop as the device rotates. If the set screw is too high it will not contact the pin; if too low it will raise the LRM off the ice and the laser beam will not be level.



Figure 4: Laser Rock Measure (LRM), Top View

The laser is turned on by pressing the single button below the display. The device is then rotated until the laser beam reflects off the strike band of the rock to be measured. Rotate the device slowly across the face of the rock and depress the button when the shortest (nearest) measurement is observed. This reading will be automatically stored in the laser's memory.

Another measurement can be made in a similar fashion; when the second measurement is stored, the first measurement will be displayed in the top line of the display.

Note that only two measurements can be stored at a time with the first measurement on the top line of the display and the second (current) measurement on the bottom line. Although the LRM was developed specifically for "closest rock to the button" measurements at the start of competitive curling events, the principle can be extended for use in general curling play when the placement of the rocks permits. There are 2 limitations for this device. First, like the other devices that use the pin for centre positioning, it cannot measure rocks that completely cover the pin. Secondly, if 2 rocks are within 17 cm of the pin and on opposite sides of the pin, there is not enough room to place the LRM on the pin. This latter issue is currently being addressed by an accessory under development by the LRM designers.