PPL Ball Qualification Procedure

February 3, 2025

Purpose

The Ball Qualification Procedure is necessary to identify balls with the requisite properties such that the balls can be used for paddle performance testing.

Preparation

1. Acquire a minimum of 12 new balls of the appropriate Make and Model (Vulcan Generation 2 VPRO Flight)
2. Condition Balls
    a. Balls must be stored in a conditioned environment for a minimum of 4 hours prior to any testing or measurements are taken.
        i. Temperature requirement: $72^o \pm 2^o\ F$
        ii. Relative humidity requirement: $50\% \pm 10\%$
3. Prepare Scale
    a. A calibrated scale is used to measure the weight of the balls.
    b. Verify scale calibration using a calibrated weight set.
4. Prepare PPL Performance Cannon
    a. Mount the Steel COR Bracket to the Performance Cannon Mill Base and ensure proper alignment (refer to figure 1)

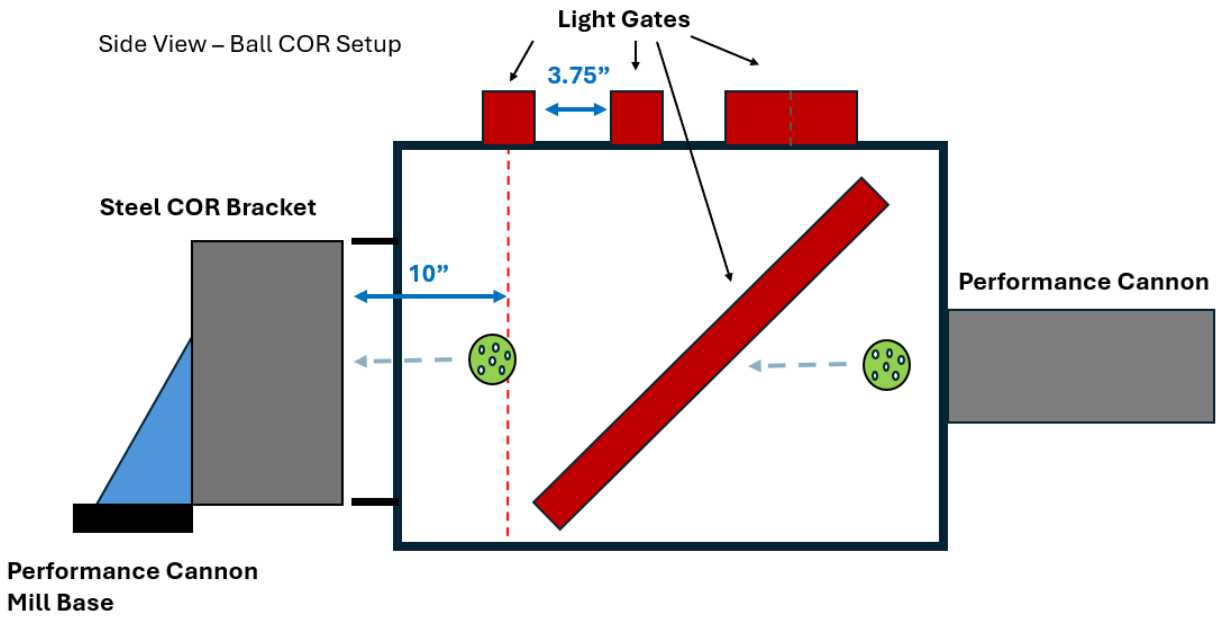

Figure 1

5. Mark Balls with PPL Ball Code and Quadrant Markings
    a. PPL Ball Code shall be marked on ball using permanent ink, Ball Code location should be near one of the Poles of the ball (refer to Figure 2)
    b. Use PPL Marking Template to divide the ball into four equal quadrants, mark each quadrant, Q_1 – Q_4, markings shall be located in the top half of each quadrant (above the ball's parting line or seam and below the Ball Code marking – refer to Figure 2)
    c. Mark the center of each quadrant on the ball's parting line, these markings will be the target impact location for each quadrant (refer to Figure 2)

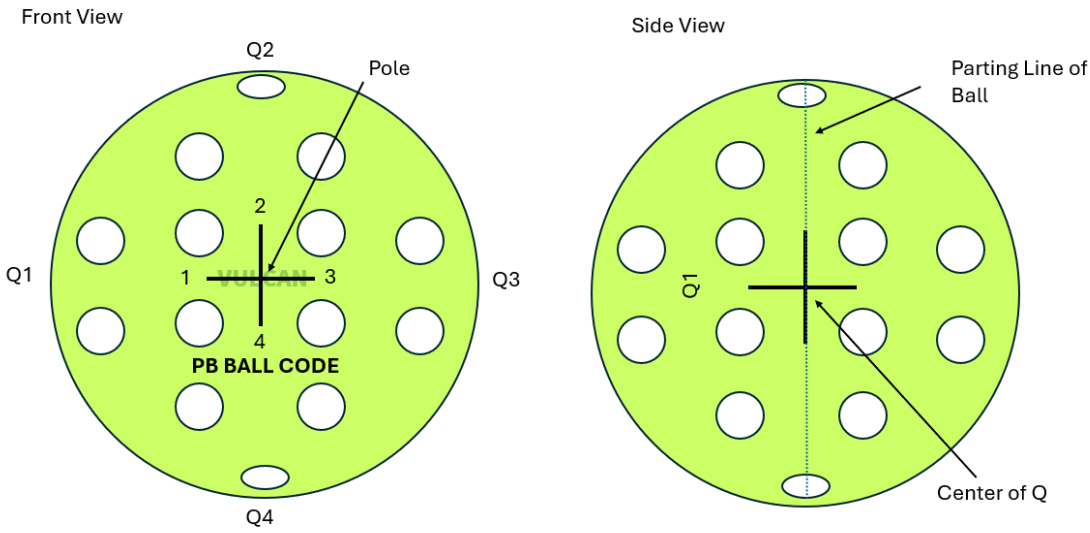

Figure 2

6. Weigh and record weight of each ball in PPL database
    a. Balls outside of the approved weight range shall be discarded
        i. Approved weight range is 0.88 oz – 0.92 oz
7. Measure and record circumference of each ball in PPL database
    a. Measure circumference in two orientations, 90 degrees to each other
    b. The average of the two measurements shall be the recorded circumference
        i. Approved circumference range is 9.048 in – 9.173 in

Ball COR Procedure

1. Load a ball to be tested into the cannon, mark quadrant one with a tick mark indicating that the ball is about to be impacted in that quadrant
2. Perform COR test at 50 mph (+/- 1mph), COR results shall be recorded in the PPL database

3. Repeat steps 1-2 with each ball until each ball has been impacted one time in its first quadrant.
4. Load a ball into the cannon, mark quadrant two with a tick mark indicating that the ball is about to be impacted in that quadrant
5. Perform COR test at 50 mph (+/- 1mph), COR results shall be recorded in the PPL database
6. Repeat steps 4-5 with each ball until each ball has been impacted one time in its second quadrant.
7. Load a ball into the cannon, mark quadrant three with a tick mark indicating that the ball is about to be impacted in that quadrant
8. Perform COR test at 50 mph (+/- 1mph), COR results shall be recorded in the PPL database
9. Repeat steps 7-8 with each ball until each ball has been impacted one time in its third quadrant.
10. Load a ball into the cannon, mark quadrant four with a tick mark indicating that the ball is about to be impacted in that quadrant
11. Perform COR test at 50 mph (+/- 1mph), COR results shall be recorded in the PPL database
12. Repeat steps 10-11 with each ball until each ball has been impacted one time in its fourth quadrant.
13. Repeat steps 1-12 with each ball until each ball has been impacted two times in each quadrant

Calculate and Record Quadrant COR Values for Each Ball

1. Calculate C_{Q1-4} values
    a. Each ball will have four C_Q values
    b. C_{Q1} = average of the two impacts on the first quadrant
    c. C_{Q2} = average of the two impacts on the second quadrant
    d. C_{Q3} = average of the two impacts on the third quadrant
    e. C_{Q4} = average of the two impacts on the fourth quadrant

Qualify Balls for use in PBCOR and Spin Rate Testing

1. For a ball to be approved for use in PBCOR testing each C_Q value must meet the following criteria:
    $C_Q \geq 0.260$
    $C_Q \leq 0.300$
2. Each ball shall be retired from use in testing after 48 impacts