DRILLING INSTRUCTIONS
For
3-PIECE, FULL SIZE CORES

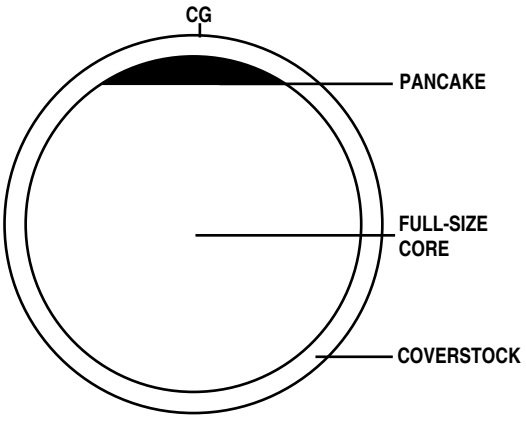
The 3-piece, full-size core has been an industry staple throughout bowling's history. The original core construction of a bowling ball was a single density sphere. Technology evolved and a weight mass was placed inside the upper edge of the core to counterbalance the weight that is removed from the top half of the ball during the drilling process, creating top weight. Although there is not a limit on top weight in an undrilled ball, the ABC restricts the amount of top or bottom weight in a drilled ball to 3 ounces. Ebonite's upper limit on top weight in an undrilled ball is five ounces and lower limit is one and one-half ounces. The upper limit on lighter weight balls is on a descending sliding scale to reflect the density differences on the core weight. This ensures that the drilled ball will be within ABC specifications for top/bottom weight.

A higher density polyester compound is poured into the core mold and is allowed to harden before the lower density material, which makes up the rest of the core, is added. This high density weight mass has the same round contour as the core on one side and is flat on the other side. Appropriately, the name "pancake" has been assigned to this weight mass. Bowlers found a stronger hook potential when the pancake was introduced to the core construction. The amount of top weight in an undrilled ball can be altered by varying the density of the pancake material or by increasing its thickness. Higher top weight creates a ball reaction that goes further down the lane and has a stronger backend hook. Lower top weight causes an earlier breakpoint and a smoother hook pattern. The center of the top weight is signified by a mark called the center of gravity. It is called "CG" for short.

Moving the CG above the center of span, towards the fingers, creates finger weight. This increases the skid characteristics of the ball. Moving the CG below the center of span, towards the thumb, creates thumb weight. This causes an earlier breakpoint. Moving the CG to the right of the center of span (to the left of the span for lefthanders) creates positive side weight. This increase the overall hook. And moving the CG to the left of the span (to the right of the span for lefthanders) creates negative side weight. This reduces the amount of hook. The ABC limit on finger, thumb, positive, or negative weights is 1 ounce.

The 3-piece, full size core is higher in RG and low in RG Differential. The higher RG creates a delayed breakpoint. The low RG differential results in an easy to control, lower hook potential. The 3-piece core is best for drier lanes, slow ball speeds, and those who like to play a straighter line to the pocket. Please consult the Ball Rating Technical Matrix for the hook potential and other technical data concerning the Maxim, Gyro, and American Pride series.

Choosing the proper ball construction and surface texture for your bowling style and lane condition will be the most important decision you and your pro shop operator will make. Choosing a drilling layout will alter the ball's characteristics within its performance parameters to fine-tune the overall reaction. Drilling layouts will not produce ball reaction without proper mechanics from the bowler and proper surface texture.



<u>CG LOCATIONS</u>

Most of the Ebonite 3-piece balls will have a three-ringed bullseye that denotes the center of gravity. It is located approximately 6-3/4" from the Ebonite "swish" logo.

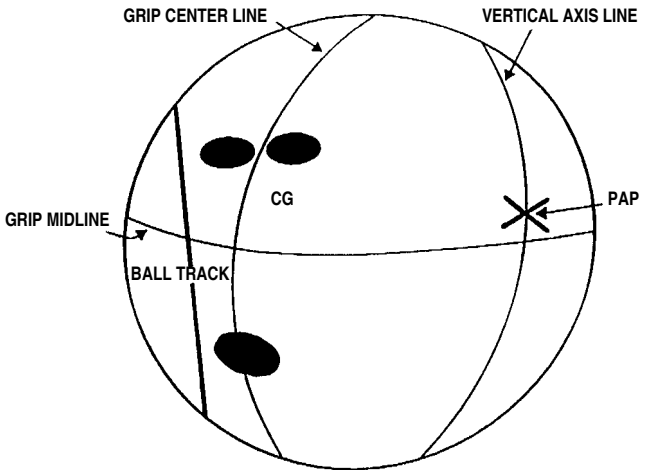
The exceptions are:

Yankee Doodle - Center of the Ebonite "swish"

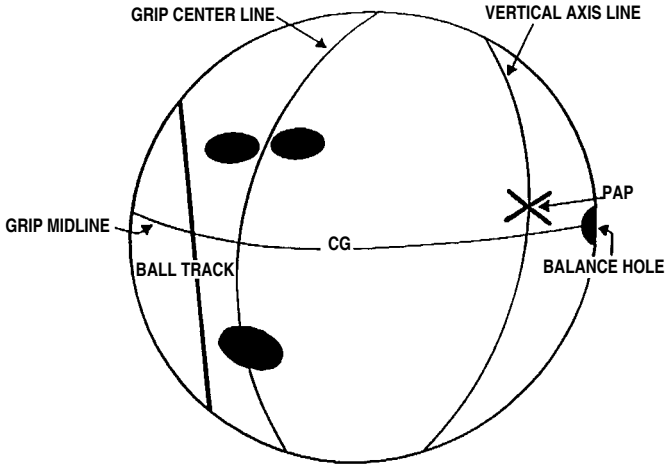
Hustlers - Small circle located on the colored stripe. Approximately 6-3/4" from the Ebonite "swish" logo

The Optyx balls have the CG marked between the lower legs of the large "X" logo.

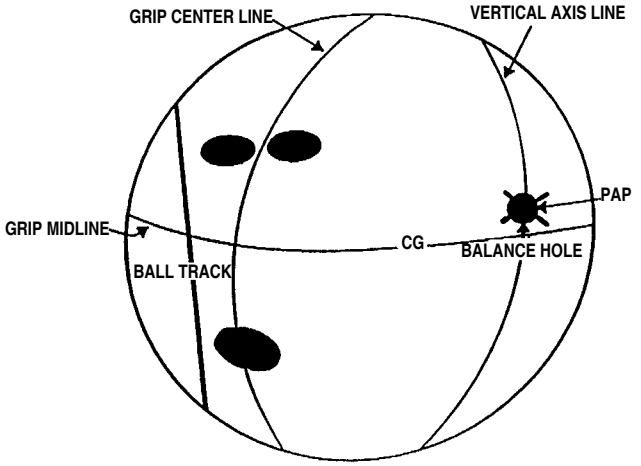
Lower ball tracks will result in PAP's that are closer to the center of span than is shown in the following illustrations. The relationship between the position of the CG and the center of span in drillings #2 and #3 are based on a fictional PAP and are not to be used as a method of ball layout. Depending on your PAP measurements, the CG may be further away or closer to the center of span than is illustrated. The important factor is its distance from the PAP, not the relationship of the CG to the center of span.



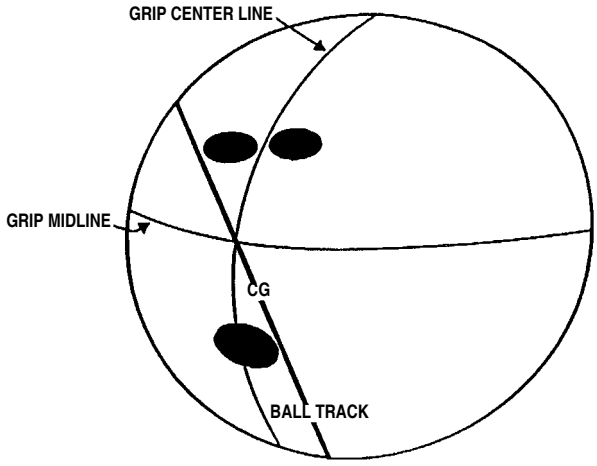
DRILLING #1	**LABEL**
Ball Choice:	All top weights
Reaction:	Delayed breakpoint, moderate backend on light to medium oil
Suitable for:	Slower ball speeds, drier heads and pines, spare shooting
Flare potential:	Low
CG Placement:	3/4 oz. positive side weight, 3/4 oz. finger weight
Balance Hole:	None needed



DRILLING #2	**LEVERAGE**
Ball Choice:	All top weights
Reaction:	Medium length with strong backend on light to medium oil
Suitable for:	Light to medium oil
Flare potential:	Low
CG Placement:	3/8" from PAP on the grip midline
Balance Hole:	Place balance hole 9 inches from the center of span and drill back to 1/2 oz. positive side weight. If stronger backend is needed, drill hole deeper to 1/2 oz. negative side weight.



DRILLING #3	**BLOCK WEIGHT**
Ball Choice:	Top weights 2 1/2 oz. or lower
Reaction:	Earlier breakpoint, smooth backend hook on light to medium oil
Suitable for:	Low ball tracks, faster ball speeds
Flare potential:	Low
CG Placement:	2 inches from PAP on the grip midline
Balance Hole:	Place on PAP, drill back to 1/2 oz. negative side weight



DRILLING #4	**FULL ROLLER**
Ball Choice:	All top weights
Reaction:	Delayed breakpoint, moderate backend hook
Suitable for:	Full rollers
Flare potential:	Low
CG Placement:	3/4 oz. positive side weight, 3/4 oz. thumb weight
Balance Hole:	None needed

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