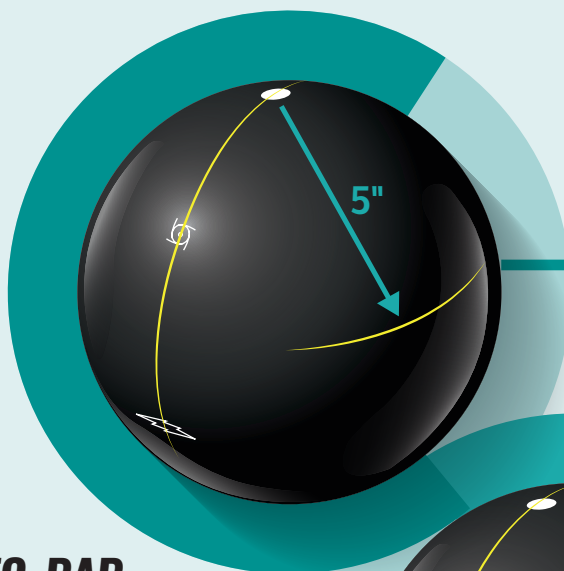


STORM



2LS DRILLING INSTRUCTIONS



PIN-TO-PAP ARC 1

This arc controls the total amount of flare utilized by the core.

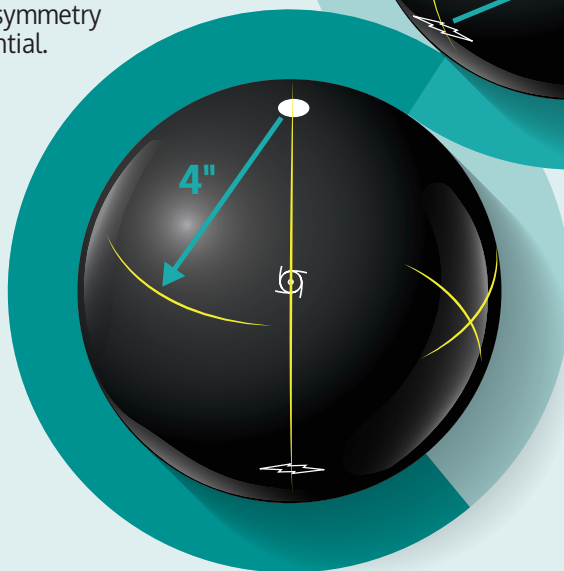
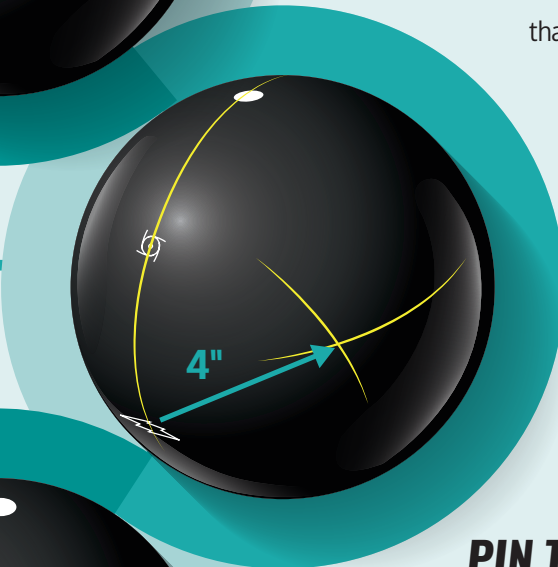
Pin-To-PAP distances longer than $3\frac{3}{8}$ " create a later, angular breakpoint shape.

Pin-To-PAP distances shorter than $3\frac{3}{8}$ " create an earlier, smoother breakpoint shape.

2 PSA-TO-PAP ARC

In asymmetric cores, measure this arc from the engraved PSA marking. This measurement controls the amount of post-drilled asymmetry and intermediate differential.

In symmetric cores, measure this arc from a reference point drawn $6\frac{3}{4}$ " from the pin through the center of gravity.



PIN TO CENTER OF GRIP ARC 3

This arc controls the amount of post-drilled total differential. Pin-To-COG distance is the 2nd most important decision to make when laying out a ball with a 2LS layout.

Distances longer than $3\frac{3}{8}$ " will increase post-drilled dynamics, making the ball stronger overall front-to-back and forcing the player deeper.

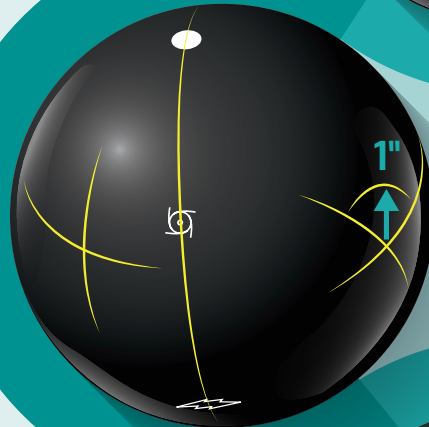
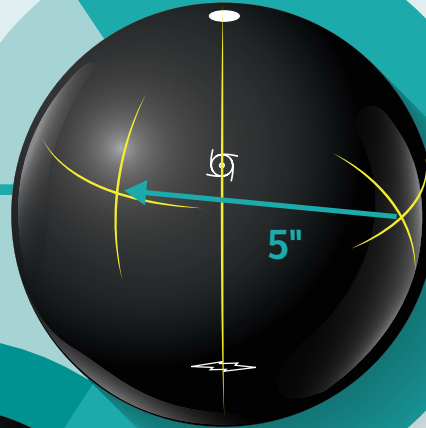
Distances shorter than $3\frac{3}{8}$ " will decrease post-drilled dynamics, making the ball weaker overall front-to-back and allow the player to target straighter up the lane.

4

LIGHTNING ARC

The Lightning Arc is drawn from the PAP and crosses the Pin-To-COG Arc. This tells the driller the minimum difference there needs to be in the Pin-To-Pap and Pin-To-COG distances.

Specific to 2LS layouts. Found using the Lightning Arc Chart:



VERTICAL PAP ARC

5

Orients the PAP with the COG.

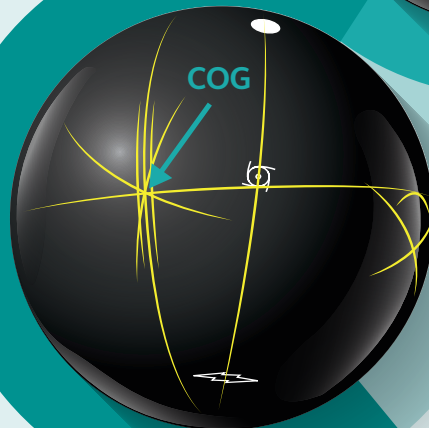
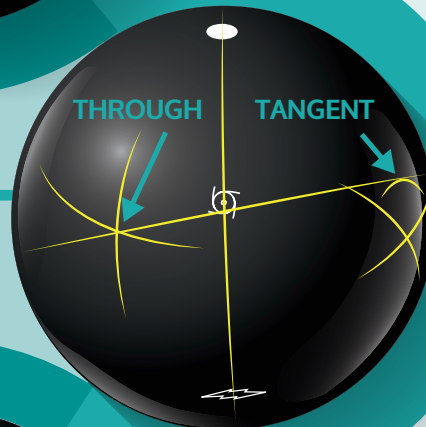
Establishes the orientation of the midline.

6

DRAWING THE MIDLINE

The midline should be tangent to the Vertical PAP Arc and pass directly through the intersection of the Pin-To-COG and Lightning Arcs.

This establishes the PAP in the correct position relative to the Pin and PSA, while maintaining the COG the correct distance from the Pin.



DRAWING THE CENTERLINE

7

The centerline should be perpendicular to the midline and pass directly through the intersection of the Pin-To-COG and Lightning Arcs.

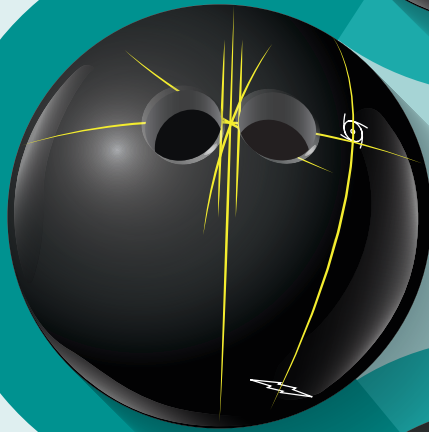
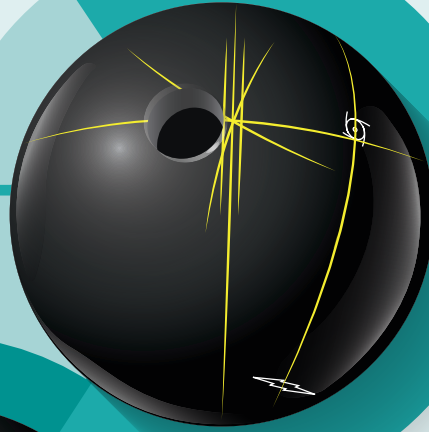
This establishes the centerline and finalizes where the bridge lines will be drawn.

8

DRILLING THE FINGERS

It's very important to drill the fingers directly off the midline to increase accuracy of the layout.

A sharp grease pencil should be used to ensure the center of the drill bit is in the center of the midline.



DRILLING THE FINGERS

9

Both fingers should be drilled directly off the midline with no offset.

If fingers are slightly offset, the PAP and layout will change dramatically.

Finger depth should be decided according to the desired reaction and Pin-To-COG distance chosen.



FINISHED BALL

5" x 4" x 4" – 2LS

2LS layout for a 2-Handed/No Thumb player with a PAP of 5" → and 1" ↓ using the center of the bridge as the point of reference.



HOLE DEPTH TIPS:

Storm DOES NOT recommend drilling depths deeper than 2¾" as the layout benefits begin to taper off. As the fingers get deeper, the RG value goes up more regardless of location. This will cause late and less overall ball motion in most cases.

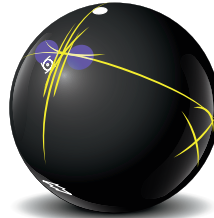
All example layouts were created using a 5" and 1" PAP measured from the center of the bridge.

1

5½"×5"×2" – 2LS

This very low flaring layout is straight through the front, clean in the midlane, but more responsive downlane given enough friction. It has the potential to be highly angular if there is enough friction in the back part of the lane, but can easily miss the spot if the lanes are "tighter".

Use this layout on the "burn" or on older lane surfaces.

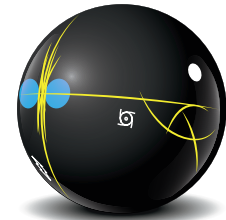


2

2"×6"×5" – 2LS

If you're looking for stable and smooth, look no further. This relatively low flaring, controllable layout excels on short patterns when there is a significant amount of friction at the end of the lane.

Rev dominant players will benefit greatly from a layout like this.



3

5"×4"×3½" – 2LS

Everyone needs a benchmark layout and this is it.

This blueprint is a great starting point for all players to get a good read on the pattern they're facing. Depending on the bowler's style, this can be a great option on a variety of patterns and angles of attack. This more than capable layout is the ideal blend of power and control.



4

4½"×3"×4½" – 2LS

Still falling into the "benchmark" category of layouts, this one is geared more towards the speed dominant player. Bowlers can expect more midlane, slightly less exit angle, and a more forward direction towards the pins during the roll phase.

Use this layout on medium-long patterns with higher volumes of oil.



5

4"×4"×5" – 2LS

Strong, capable, confidence inspiring.

This combination of Pin-to-PAP and Pin-to-COG coordinates effortlessly blend out over/under conditions and works even better when used on urethane covers.

This should be the go-to choice for players when the lanes begin to transition.



6

3½"×4"×6½" – 2LS

When the pattern is fresh and has volume to match, this layout sets the standard. Players who are facing flat, difficult patterns that need additional early control will find this strategy to be quite effective. Because this layout is highly aggressive and creates the earliest, most forward rolling direction at the end of the pattern, it's not recommended on high friction surfaces or lower volume patterns.

Extremely speed dominant bowlers can appreciate the strength this layout provides.

