



## Drilling Angles shown are for 5" PAP – Adjust for other PAPs

Bonus Drilling Chart						
Layout	Layout Specs	Low RG	Int Diff	Total Diff	Performance Differential	RG PAP
Undrilled	-	2.487	0.000	0.030	0.030	
Maximum Flip	Pin Over 70° x 3-1/2" x 20°		0.012	0.040	0.041	2.497
Most Versatile	Pin Over 75° x 4" x 30°		0.013	0.038	0.040	2.484
Smoother Motion	Pin Over 80° x 4-1/2" x 40°		0.012	0.034	0.036	2.503
Smaller Hook	Pin Besides 90° x 2 1/4" x 45°		0.008	0.024	0.025	2.488
	Undrilled  Maximum Flip  Most Versatile  Smoother Motion	Layout Specs  Undrilled -  Maximum Flip Pin Over 70° x 3-1/2" x 20°  Most Versatile Pin Over 75° x 4" x 30°  Smoother Motion Pin Over 80° x 4-1/2" x 40°	Layout Specs Low RG  Undrilled - 2.487  Maximum Flip Pin Over 70° x 3-1/2" x 20°  Most Versatile Pin Over 75° x 4" x 30°  Smoother Motion Pin Over 80° x 4-1/2" x 40°	Layout         Layout Specs         Low RG         Int Diff           Undrilled         -         2.487         0.000           Maximum Flip         Pin Over 70° x 3-1/2" x 20°         0.012           Most Versatile         Pin Over 75° x 4" x 30°         0.013           Smoother Motion         Pin Over 80° x 4-1/2" x 40°         0.012	Layout         Layout Specs         Low RG         Int Diff         Total Diff           Undrilled         -         2.487         0.000         0.030           Maximum Flip         Pin Over 70° x 3-1/2" x 20°         0.012         0.040           Most Versatile         Pin Over 75° x 4" x 30°         0.013         0.038           Smoother Motion         Pin Over 80° x 4-1/2" x 40°         0.012         0.034	Layout         Layout Specs         Low RG         Int Diff         Total Diff         Performance Differential           Undrilled         -         2.487         0.000         0.030         0.030           Maximum Flip         Pin Over 70° x 3-1/2" x 20°         0.012         0.040         0.041           Most Versatile         Pin Over 75° x 4" x 30°         0.013         0.038         0.040           Smoother Motion         Pin Over 80° x 4-1/2" x 40°         0.012         0.034         0.036

This chart uses a 5" horizontal axis co-ordinate. Adjust the drilling angle for other horizontal co-ordinates. Always use the pin to PAP distance and VAL angle to get the desire ball motion.

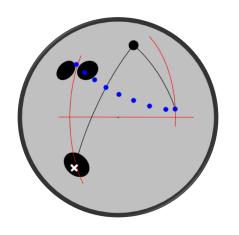
"Performance Differential" is a term used to accurately describe the track flare of a ball. The TRUE amount of track flare of a drilled ball is related to both the intermediate and total differential of the drilled ball. The "Performance Differential" of the drilled ball measures the relationship between the intermediate and total differential to give an accurate measure of the amount of track flare in the drilled ball.



## **Suggested Layouts for Symmetric Cores**

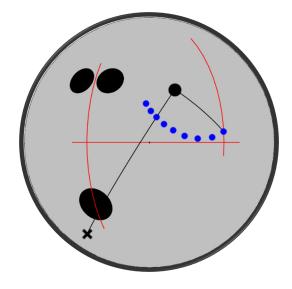
A – Maximum Flip

Pin Over 70° x 3½" x 20°



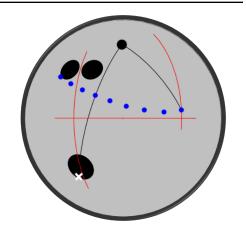
**D** –Smaller Hook

Pin Under 90° x 2 1/4" x 45°



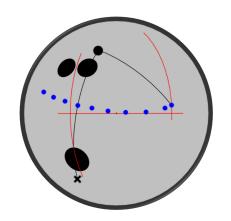
B - Most Versatile

*Pin Over* 75° x 4" x 30°



**C – Smoother Motion** 

*Pin Over* 85° x 4-1/2" x 40°



The "X" on the diagrams indicates the Preferred Spin Axis (PSA / Mass Bias) of the drilled ball, and the line that connects the PSA and PIN after drilling is referred to as the "Pin to Spin Line". The important feature of the "Pin to Spin Line" is that the ball revs up when the migrating axis crosses this line so the sooner the migrating axis crosses the "Pin to Spin Line", the sooner the ball rev up.