



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

Payback Drilling Chart						
Layout	Layout Specs	Low RG	Int Diff	Total Diff	Performance Differential	RG PAP
Undrilled	-	2.528	0.000	0.041	0.041	
Maximum Flip	Pin Over 70° x 3-1/2" x 20°		0.013	0.048	0.050	2.548
Most Versatile	Pin Over 75° x 4" x 30°		0.013	0.046	0.048	2.552
Smoother Motion	Pin Over 80° x 4-1/2" x 40°		0.012	0.042	0.044	2.556
Smaller Hook	Pin Besides 90° x 2 1/4" x 45°		0.008	0.036	0.037	2.537
	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 Undrilled - 2.528 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 - 2.528 0.000 Maximum Flip Pin Over 70° x 3-1/2" x 20° 0.013 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 - 2.528 0.000 0.041 Maximum Flip Pin Over 70° x 3-1/2" x 20° 0.013 0.048 Most Versatile Pin Over 75° x 4" x 30° 0.013 0.046 Smoother Motion Pin Over 80° x 4-1/2" x 40° 0.012 0.042	Layout Layout Specs Low RG Int Diff Total Diff Performance Differential Undrilled - 2.528 0.000 0.041 0.041 Maximum Flip Pin Over 70° x 3-1/2" x 20° 0.013 0.048 0.050 Most Versatile Pin Over 75° x 4" x 30° 0.013 0.046 0.048 Smoother Motion Pin Over 80° x 4-1/2" x 40° 0.012 0.042 0.044

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.

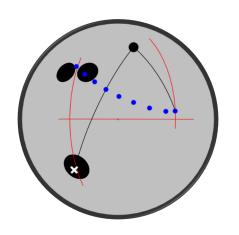
"Performance Differential" is a term used to accurately describe the track flare of a ball. The TRUE amount of track flare of a drilled ball is related to both the intermediate and total differential of the drilled ball. The "Performance Differential" of the drilled ball measures the relationship between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

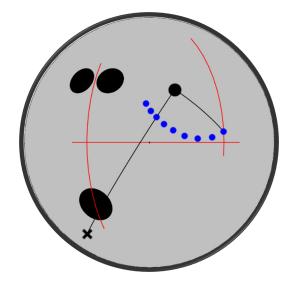
A – Maximum Flip

Pin Over 70° x 3½" x 20°



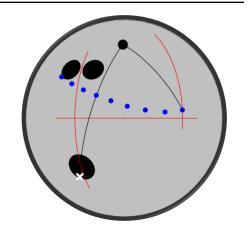
D -Smaller Hook

Pin Under 90° x 2 1/4" x 45°



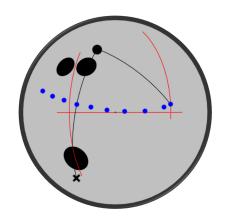
B - Most Versatile

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.