



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

Layout	Layout Specs	Low RG	Int Diff	Total Diff	Performance Differential	RG PAP
Undrilled	-	2.487	0.001	0.053	0.053	
Maximum Flip	Pin Over 70° x 3-1/2" x 20°		0.011	0.061	0.062	2.508
Most Versatile	Pin Over 75° x 4" x 30°		0.011	0.058	0.059	2.514
Smoother Motion	Pin Over 80° x 4-1/2" x 40°		0.010	0.054	0.055	2.520
Smaller Hook	Pin Besides 90° x 2 1/4" x 45°		0.007	0.058	0.059	2.493
	Undrilled Maximum Flip Most Versatile Smoother Motion	Undrilled-Maximum FlipPin Over 70° x 3-1/2" x 20°Most VersatilePin Over 75° x 4" x 30°Smoother MotionPin Over 80° x 4-1/2" x 40°	Undrilled-2.487Maximum FlipPin Over 70° x 3-1/2" x 20°2.487Most VersatilePin Over 75° x 4" x 30°-Smoother MotionPin Over 80° x 4-1/2" x 40°-	Undrilled - 2.487 0.001   Maximum Flip Pin Over 70° x 3-1/2" x 20° 0.011 0.011   Most Versatile Pin Over 75° x 4" x 30° 0.011 0.011   Smoother Motion Pin Over 80° x 4-1/2" x 40° 0.010	Undrilled - 2.487 0.001 0.053   Maximum Flip Pin Over 70° x 3-1/2" x 20° 0.011 0.061   Most Versatile Pin Over 75° x 4" x 30° 0.011 0.058   Smoother Motion Pin Over 80° x 4-1/2" x 40° 0.010 0.054	Undrilled - 2.487 0.001 0.053 0.053   Maximum Flip Pin Over 70° x 3-1/2" x 20° 0.011 0.061 0.062   Most Versatile Pin Over 75° x 4" x 30° 0.011 0.058 0.059   Smoother Motion Pin Over 80° x 4-1/2" x 40° 0.010 0.054 0.055

This chart uses a 5" horizontal axis coordinate. Adjust the drilling angle for other horizontal coordinates. 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.

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## **Suggested Layouts for Symmetric Cores**



*Pin Over* 70° x 3½" x 20°



B – Most Versatile

*Pin Over* 75° x 4" x 30°

## C – Smoother Motion

*Pin Over* 85° x 4-1/2" x 40°



**D**-Smaller Hook

*Pin Under* 90° x 2 ¼" x 45°



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".