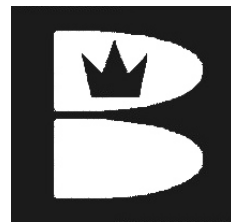


Brunswick® 



Asymmetric Layouts 2009

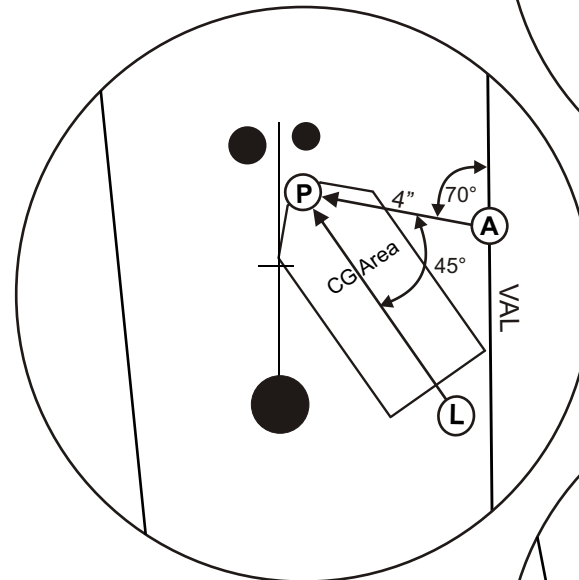
- **Maximum Hook & Arc**
 - Good for most House Shots
- **Mid-Lane Hook & Back -End**
 - A favorite for fresh PBA and Sport Conditions
- **Length & Back -End**
 - A favorite for broken down PBA and Sport Conditions
- **Length**
 - Good for most broken down House Shots
- **Full Roller Options**

Maximum Hook & Arc

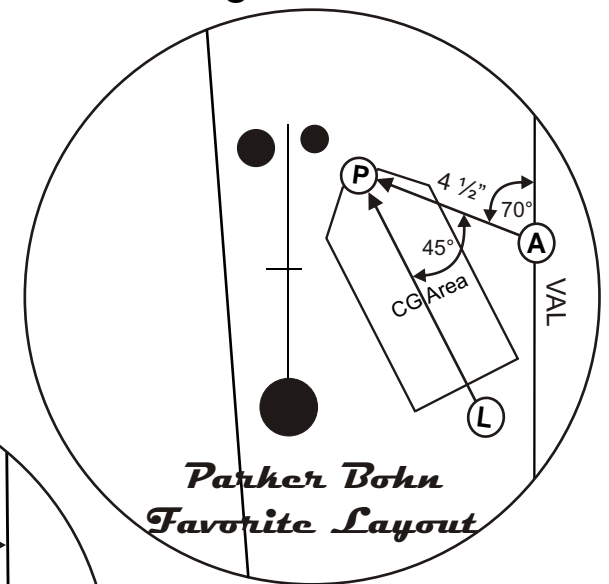
Asymmetric Core

- Best pin out distance to use: 0" – 3 1/2"
 - Locator pin set at 45 degrees
 - Pin below fingers (VAL angle 70 degrees)
 - Rev's up strong for maximum hook with a continuous back-end.
 - Note: If an X-hole is necessary to make the ball USBC legal, draw a line from the Grip center through the CG and place the X-hole where it hits the VAL
 - Responds to the lane the soonest.
 - Slowest response to friction.
1. (P) is the larger circle or pin on the ball that marks the top of the core.
 2. (L) is a smaller circle or pin that marks Preferential Spin Axis (PSA / Mass Bias) of the ball
 3. For left-handed bowlers use the mirror images of these layouts
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.

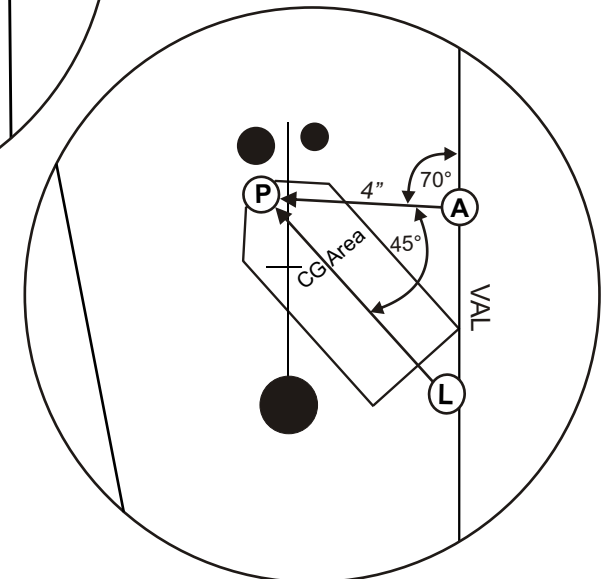
Medium Track



High Track



Low Track

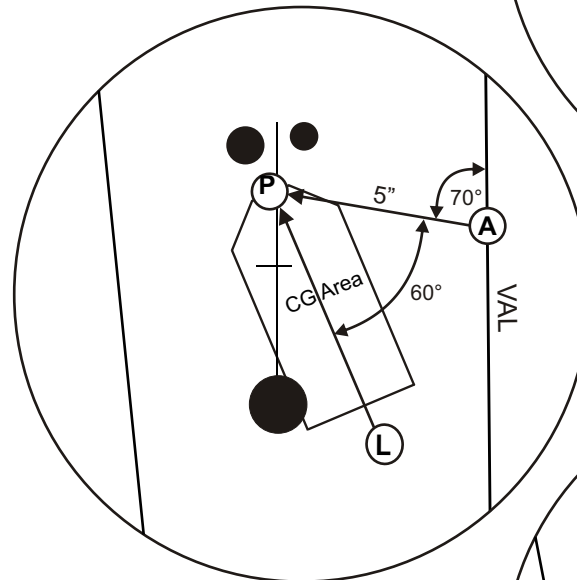


Mid-Lane Hook & Back-End

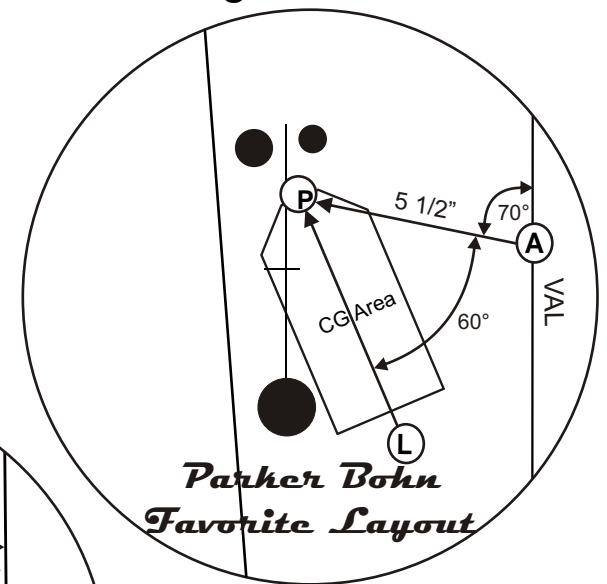
Asymmetric Core

- Best pin out distance to use: 0" – 3 1/2"
 - Locator pin set at 60 degrees
 - Pin below fingers (VAL angle 70 degrees)
 - This layout helps bowlers open up the mid-lane and recover on heavy carry down
 - Note: If an X-hole is necessary to make the ball USBC legal, draw a line from the Grip center through the CG and place the X-hole where it hits the VAL
 - Responds to the lane soon.
 - Slow response to friction.
-
1. (P) is the larger circle or pin on the ball that marks the top of the core.
 2. (L) is a smaller circle or pin that marks Preferential Spin Axis (PSA / Mass Bias) of the ball
 3. For left-handed bowlers use the mirror images of these layouts
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.

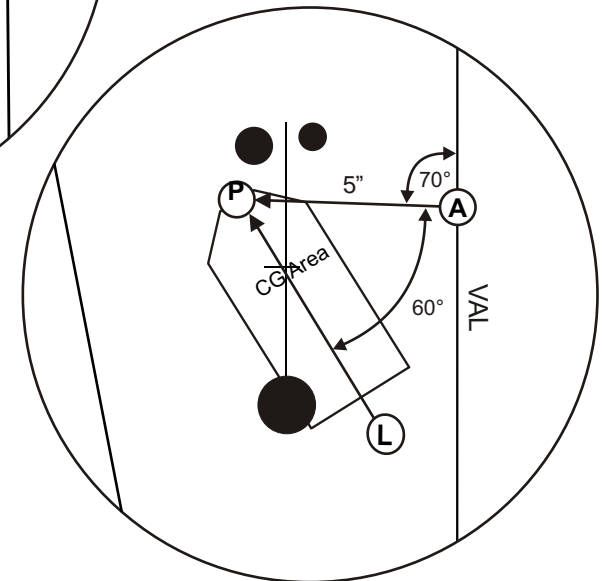
Medium Track



High Track



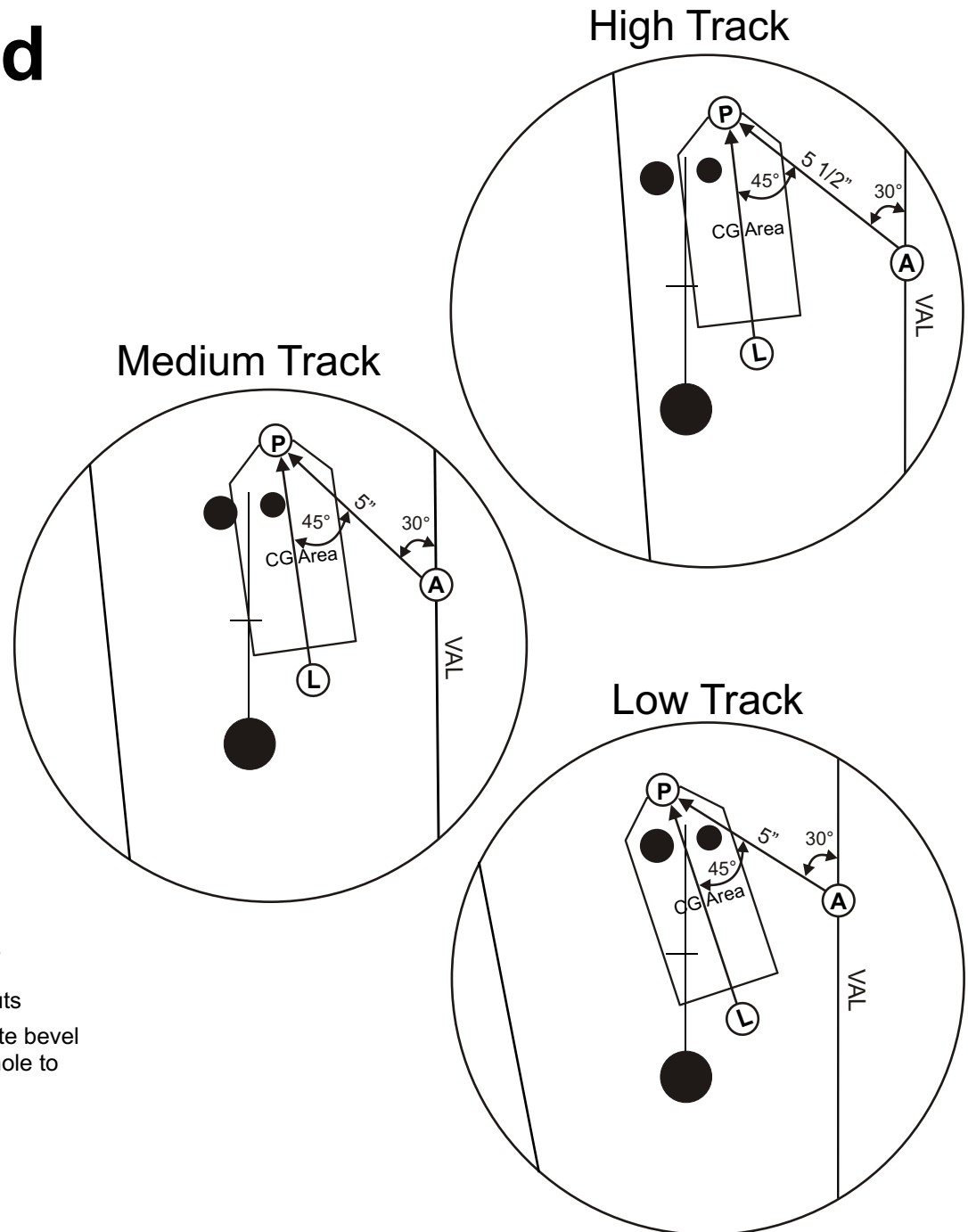
Low Track



Length & Back-End

Asymmetric Core

- Best pin out distance to use: 3" – 6"
 - Locator pin set at 45 degrees
 - Pin above fingers (VAL angle 30 degrees)
 - This layout helps bowlers open up the mid-lane and recover on heavy carry down
 - Note: If an X-hole is necessary to make the ball USBC legal, draw a line from the Grip center through the CG and place the X-hole where it hits the VAL
 - Responds to the lane late.
 - Fast response to friction.
-
1. **(P)** is the larger circle or pin on the ball that marks the top of the core.
 2. **(L)** is a smaller circle or pin that marks Preferential Spin Axis (PSA / Mass Bias) of the ball
 3. For left-handed bowlers use the mirror images of these layouts
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin **(P)** must be at least one inch from any drilled hole to comply with the Brunswick warranty.

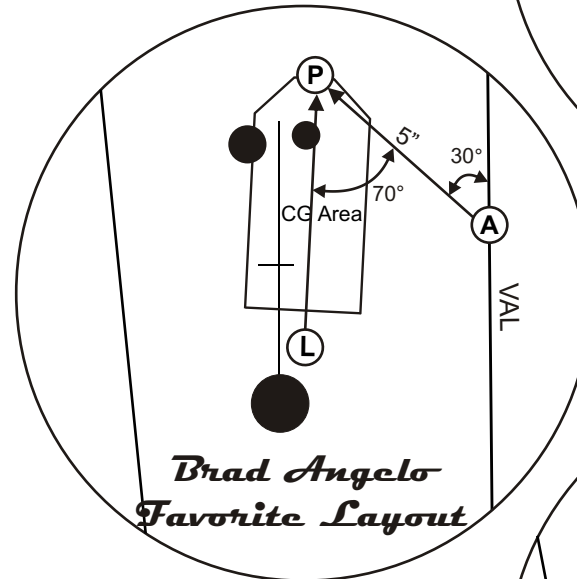


Length

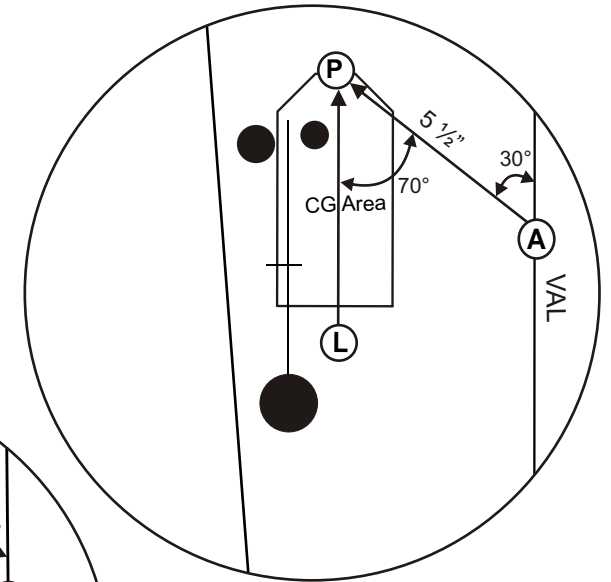
Asymmetric Core

- Best pin out distance to use: 3" – 6"
- Locator pin set at 70 degrees
- Pin above fingers (VAL angle 30 degrees)
- This layout helps bowlers open up the mid-lane and recover on heavy carry down
- Note: If an X-hole is necessary to make the ball USBC legal, draw a line from the Grip center through the CG and place the X-hole where it hits the VAL
- Responds to the lane the latest.
- Fastest response to friction.

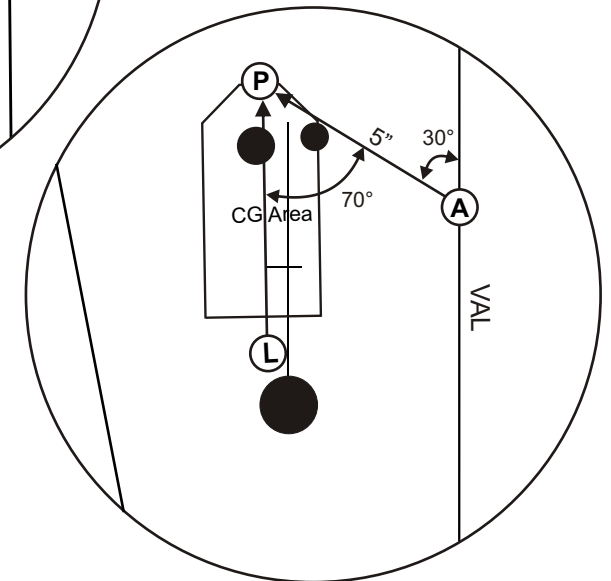
Medium Track



High Track



Low Track

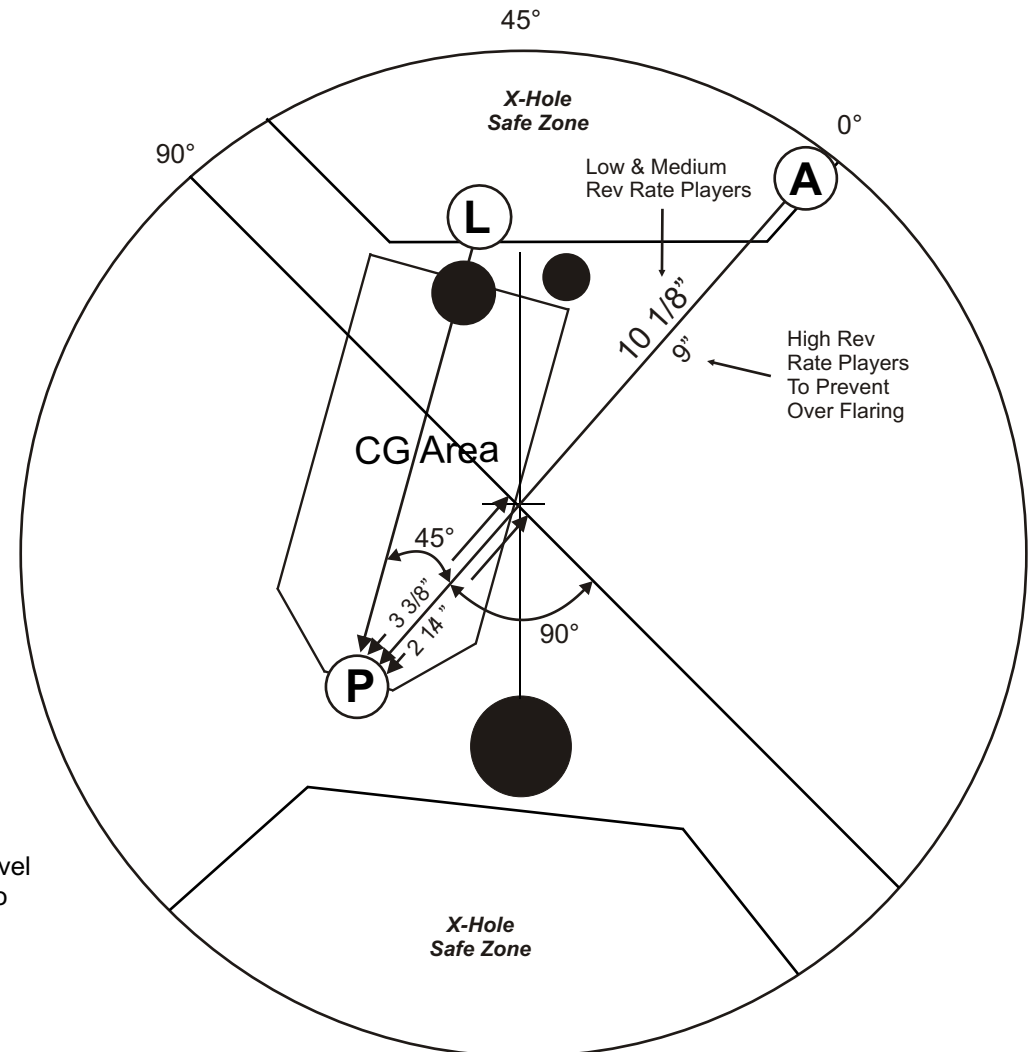


1. (P) is the larger circle or pin on the ball that marks the top of the core.
 2. (L) is a smaller circle or pin that marks Preferential Spin Axis (PSA / Mass Bias) of the ball
 3. For left-handed bowlers use the mirror images of these layouts
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.

Maximum Hook & Arc - Full Roller

Asymmetric Core

- Best pin out distance to use: 3"– 6"
 - This layout will give the bowler maximum hook with a continuous back-end.
 - Note: If an X-hole is necessary to make the ball USBC legal, place it in the X-hole safe zone 6" from center of grip to avoid contact with the track.
1. **(P)** is the larger circle or pin on the ball that marks the top of the core.
 2. **(L)** is a smaller circle or pin that marks Preferential Spin Axis (PSA / Mass Bias) of the ball
 3. For left-handed bowlers use the mirror images of these layouts
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin **(P)** must be at least one inch from any drilled hole to comply with the Brunswick warranty.

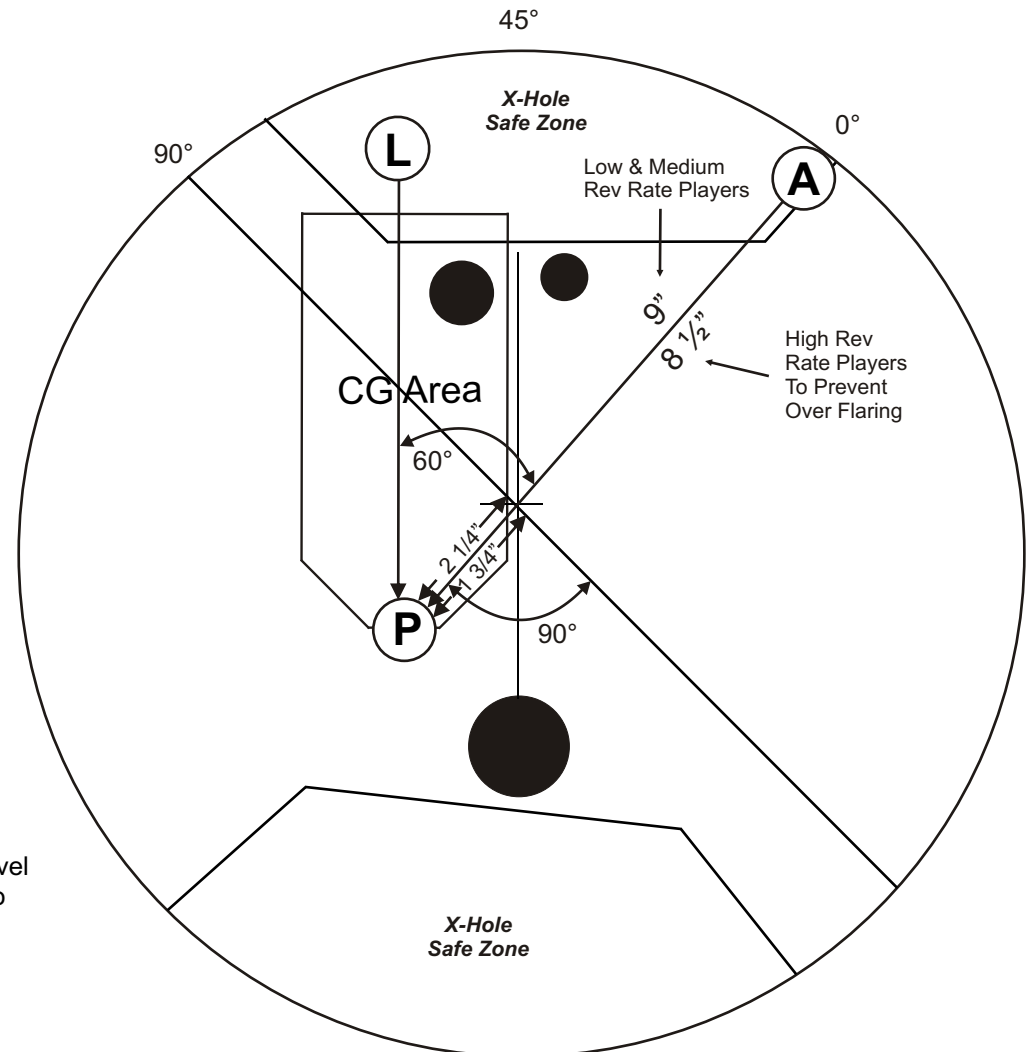


*Dave Ewald
Favorite Layout*

Length & Back-End - Full Roller

Asymmetric Core

- Best pin out distance to use: 0"– 3"
- This layout helps bowlers create length with a strong back-end
- Note: If an X-hole is necessary to make the ball USBC legal, place it in the X-hole safe zone 6" from center of grip to avoid contact with the track.

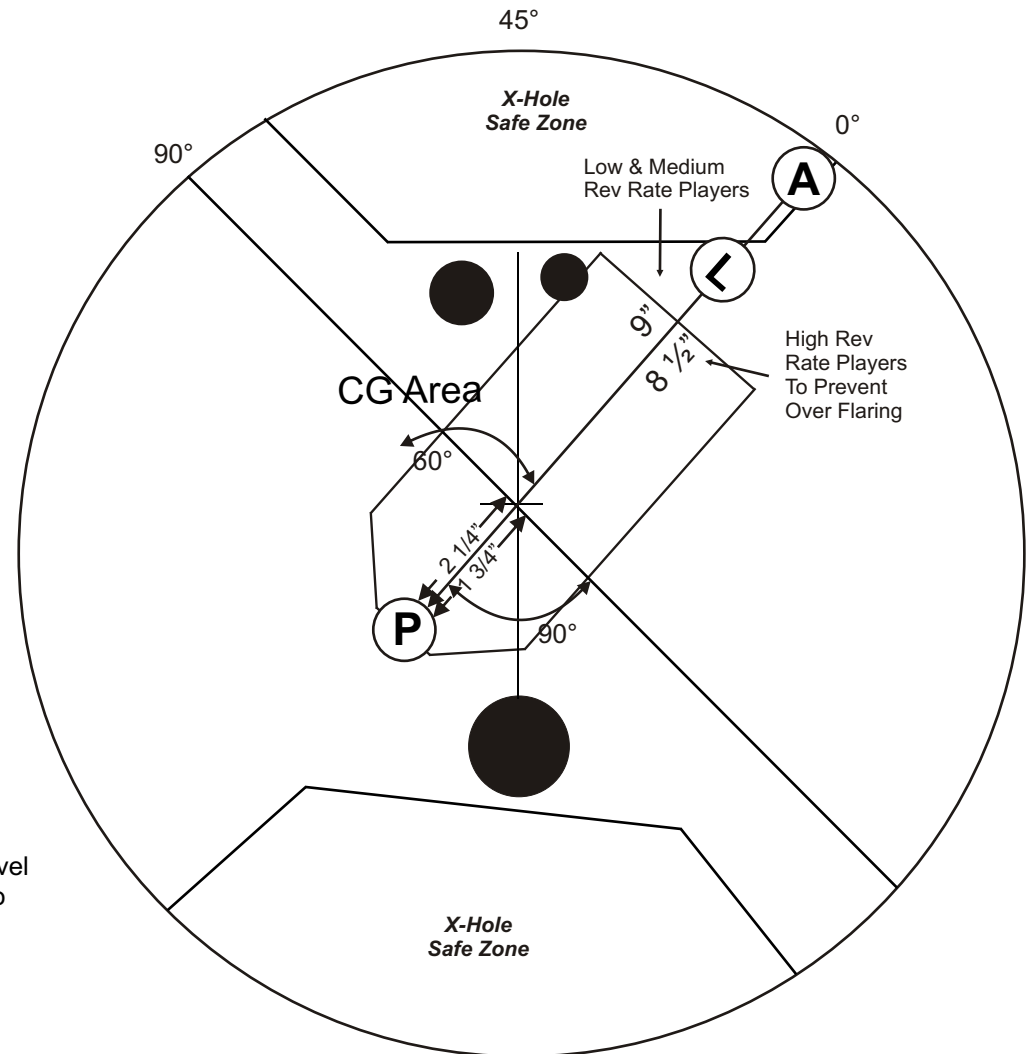


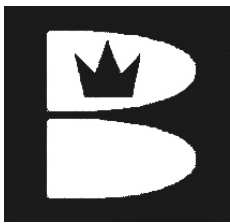
1. (P) is the larger circle or pin on the ball that marks the top of the core.
 2. (L) is a smaller circle or pin that marks Preferential Spin Axis (PSA / Mass Bias) of the ball
 3. For left-handed bowlers use the mirror images of these layouts
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.

Length - Full Roller

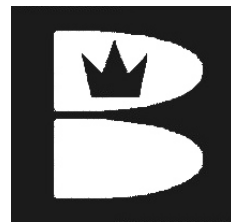
Asymmetric Core

- Best pin out distance to use: 0"– 3"
 - This layout helps bowlers create length with a smooth arcing back-end
 - Note: If an X-hole is necessary to make the ball USBC legal, place it in the X-hole safe zone 6" from center of grip to avoid contact with the track.
1. **(P)** is the larger circle or pin on the ball that marks the top of the core.
 2. **(L)** is a smaller circle or pin that marks Preferential Spin Axis (PSA / Mass Bias) of the ball
 3. For left-handed bowlers use the mirror images of these layouts
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin **(P)** must be at least one inch from any drilled hole to comply with the Brunswick warranty.





Brunswick 



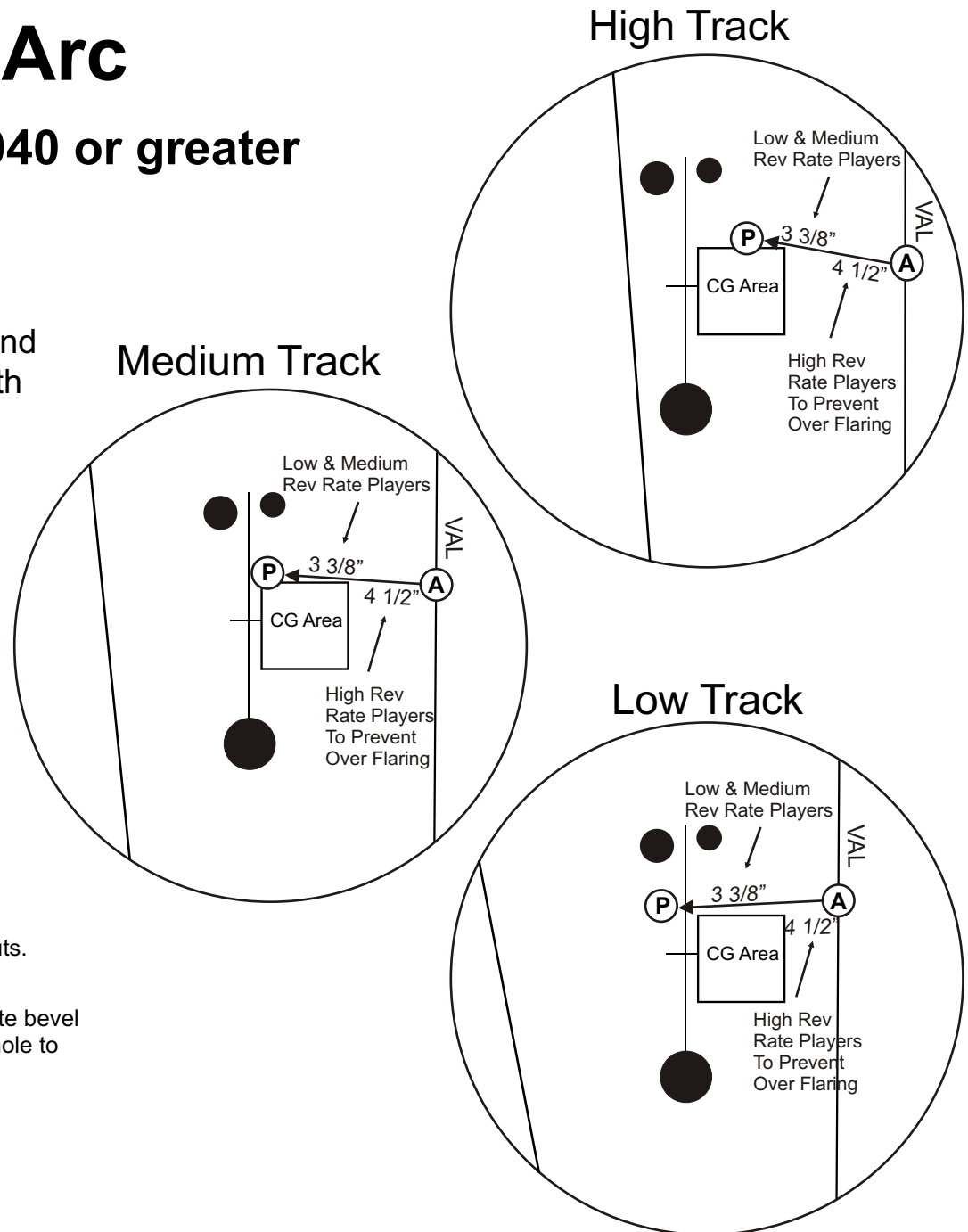
Symmetric Layouts 2009

- **Maximum Hook & Arc**
 - Good for most House Shots
- **Mid-Lane Hook & Back -End**
 - A favorite for fresh PBA and Sport Conditions
- **Length & Back -End**
 - A favorite for broken down PBA and Sport Conditions
- **Length**
 - Good for most broken down House Shots
- **Full Roller Options**

Maximum Hook & Arc

Symmetric Core - RGdiff - 0.040 or greater

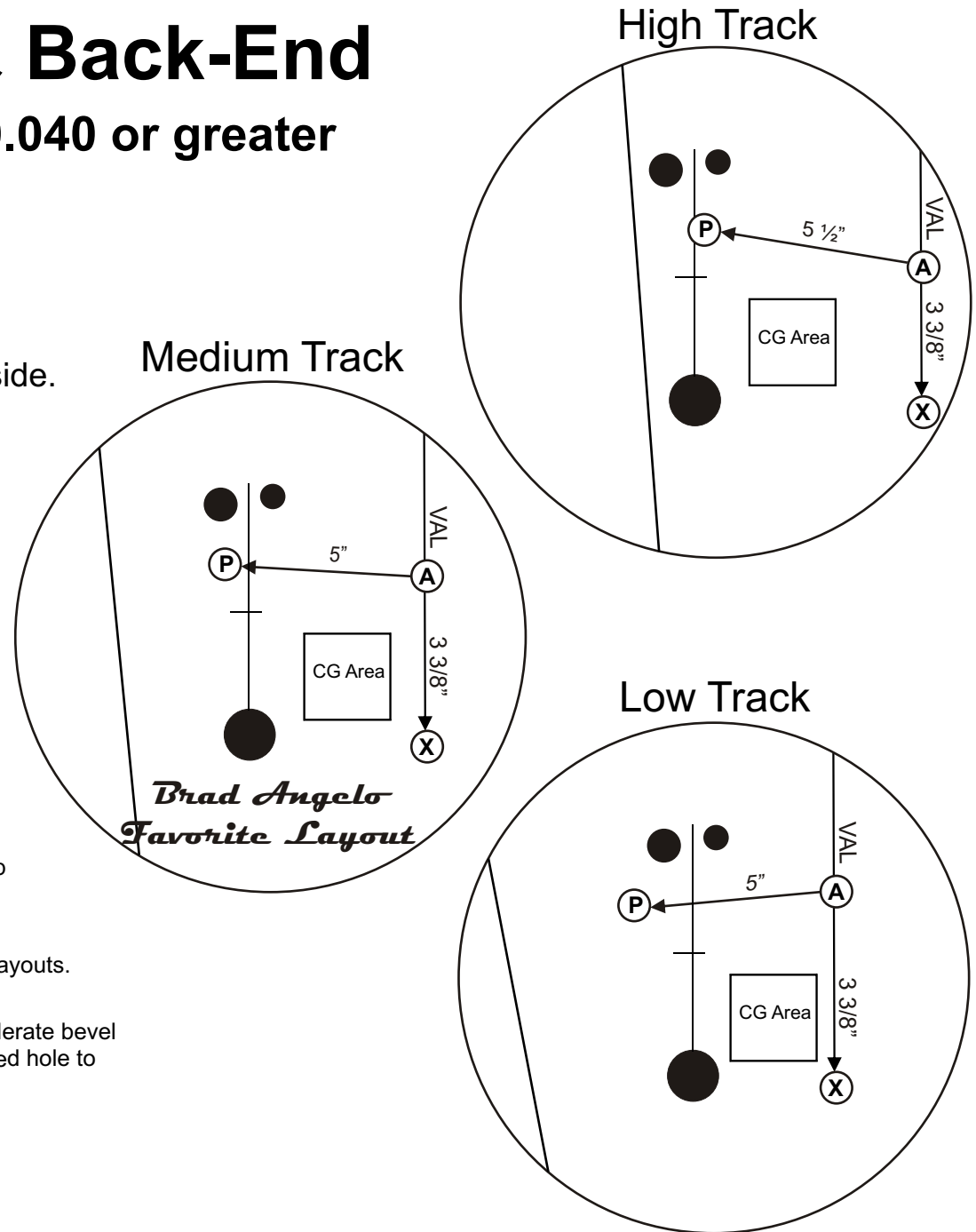
- Best pin out distance to use: 0" – 3 1/2"
 - Before drilling, the ball should balance around 3/4 positive side so that you can fine tune with an X - hole if needed.
 - To fine tune with an X – hole please see our attached drilling instructions.
 - Rev's up strong for maximum hook with a continuous back-end.
 - Responds to the lane the soonest.
 - Slowest response to friction.
1. (P) is the larger circle or pin on the ball that marks the top of the core.
 2. For left-handed bowlers use the mirror images of these layouts.
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.



Mid-Lane Hook & Back-End

Symmetric Core - RGdiff - 0.040 or greater

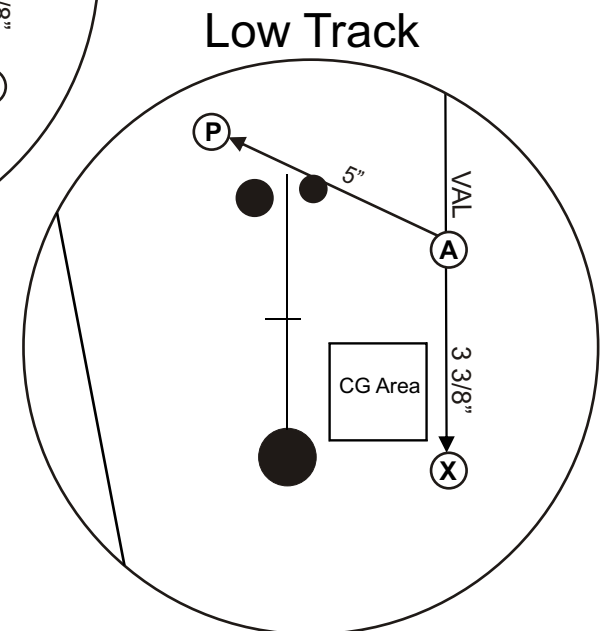
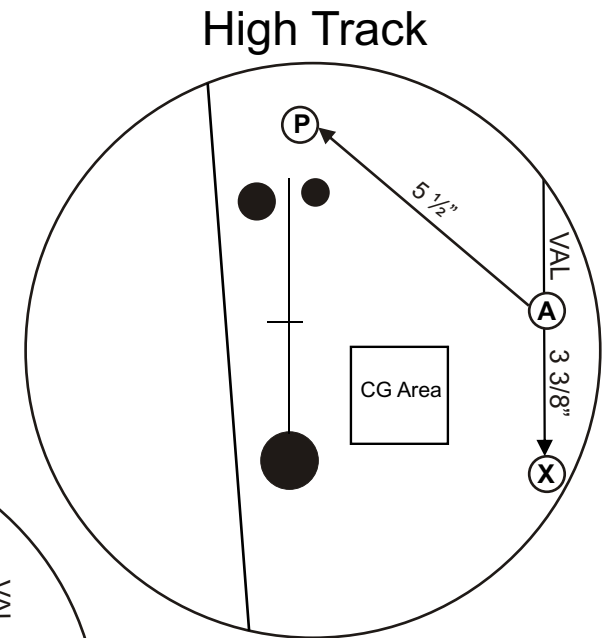
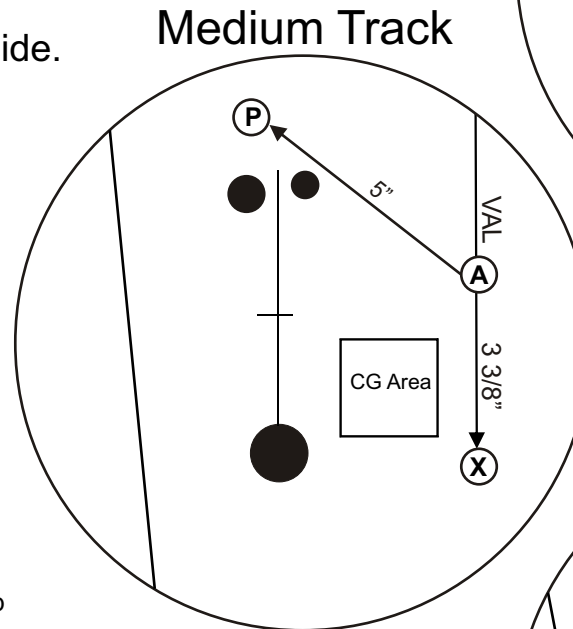
- Best pin out distance to use: 2" – 4"
 - Before drilling, the ball should balance between $\frac{3}{4}$ and $1\frac{1}{2}$ thumb and positive side. both thumb and side should weigh close to the same amount.
 - X-hole size should be $1\frac{1}{8}$ X $2\frac{1}{2}$ deep.
 - This layout helps bowlers open up the mid-lane and recover on heavy carry down.
 - Responds to the lane soon.
 - Slow response to friction.
1. (P) is the larger circle or pin on the ball that marks the top of the core.
 2. (X) is where to drill the X-hole on the ball.
 3. For left-handed bowlers use the mirror images of these layouts.
- Note: Finger, thumb and X-holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.



Length & Back-End

Symmetric Core - RGdiff - 0.040 or greater

- Best pin out distance to use: 3" – 6"
- Before drilling, the ball should balance between $\frac{3}{4}$ and 1 $\frac{1}{2}$ thumb and positive side. both thumb and side should weigh close to the same amount.
- X-hole size should be 1 $\frac{1}{8}$ X 2 $\frac{1}{2}$ deep.
- This layout helps bowlers create length with a strong back-end.
- Responds to the lane late.
- Fast response to friction.

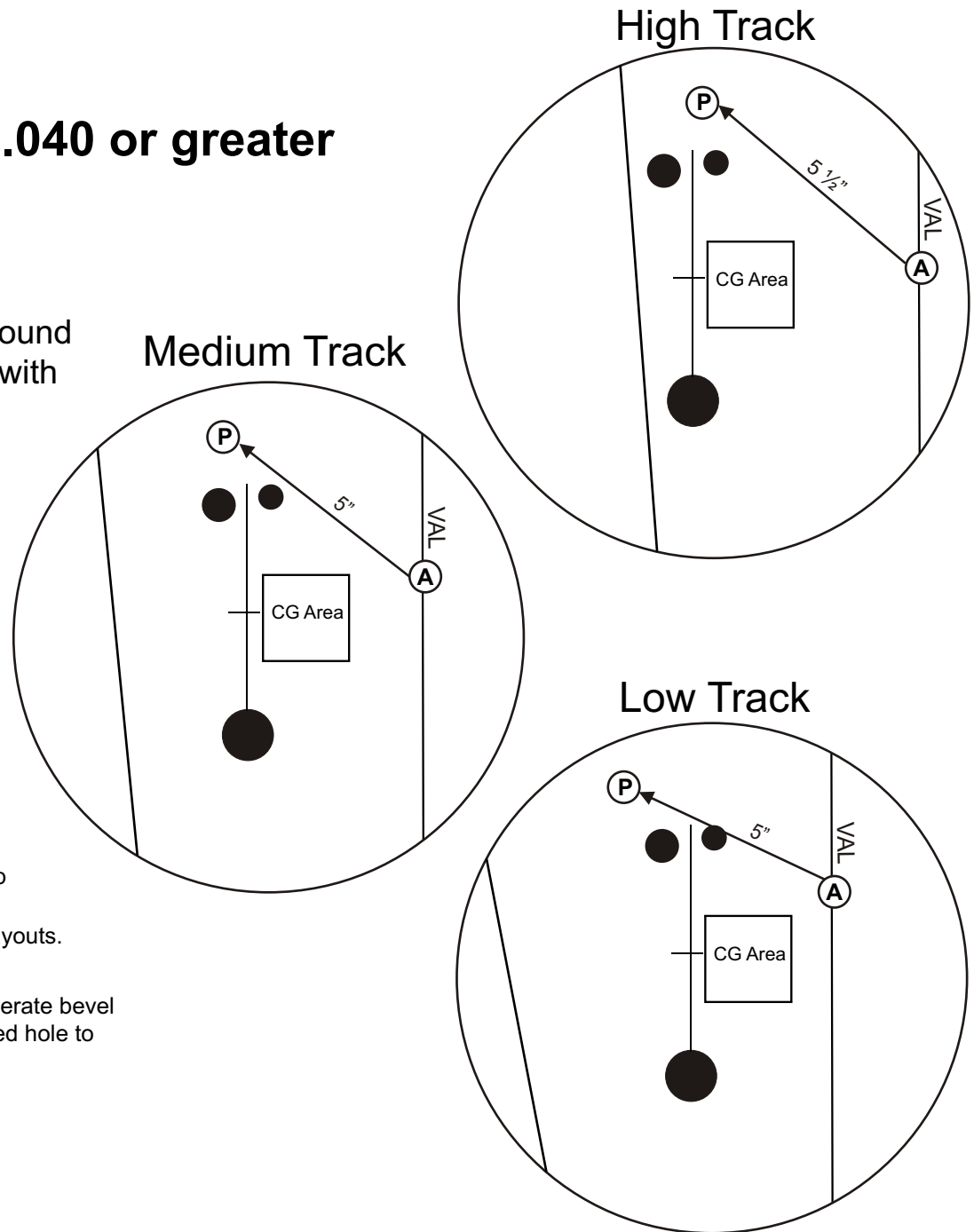


1. (P) is the larger circle or pin on the ball that marks the top of the core.
 2. (X) is where to drill the X-hole on the ball.
 3. For left-handed bowlers use the mirror images of these layouts.
- Note: Finger, thumb and X-holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.

Length

Symmetric Core - RGdiff - 0.040 or greater

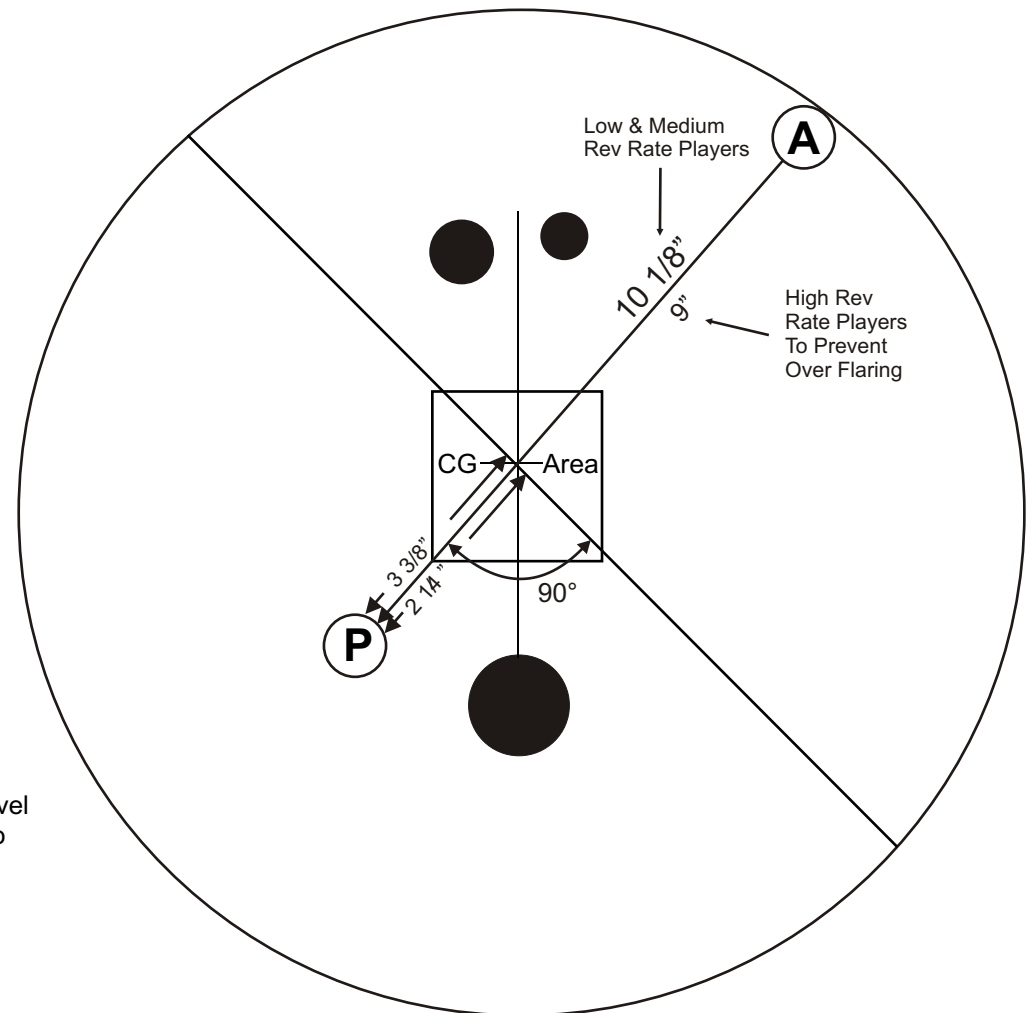
- Best pin out distance to use: 3" – 6"
 - Before drilling, the ball should balance around $\frac{3}{4}$ positive side so that you can fine tune with an X - hole if needed.
 - To fine tune with an X – hole please see our attached drilling instructions.
 - Length drilling with arcing back-end.
 - Responds to the lane the latest.
 - Fastest response to friction.
-
- 1. (P) is the larger circle or pin on the ball that marks the top of the core.
 - 2. For left-handed bowlers use the mirror images of these layouts.
-
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.



Maximum Hook & Arc - Full Roller

Symmetric Core - RGdiff - 0.040 or greater

- Best pin out distance to use: 1"– 4"
- This Basic Full Roller Drilling will not over flare for most Bowlers.
- This layout will give the bowler maximum hook with a continuous back-end.

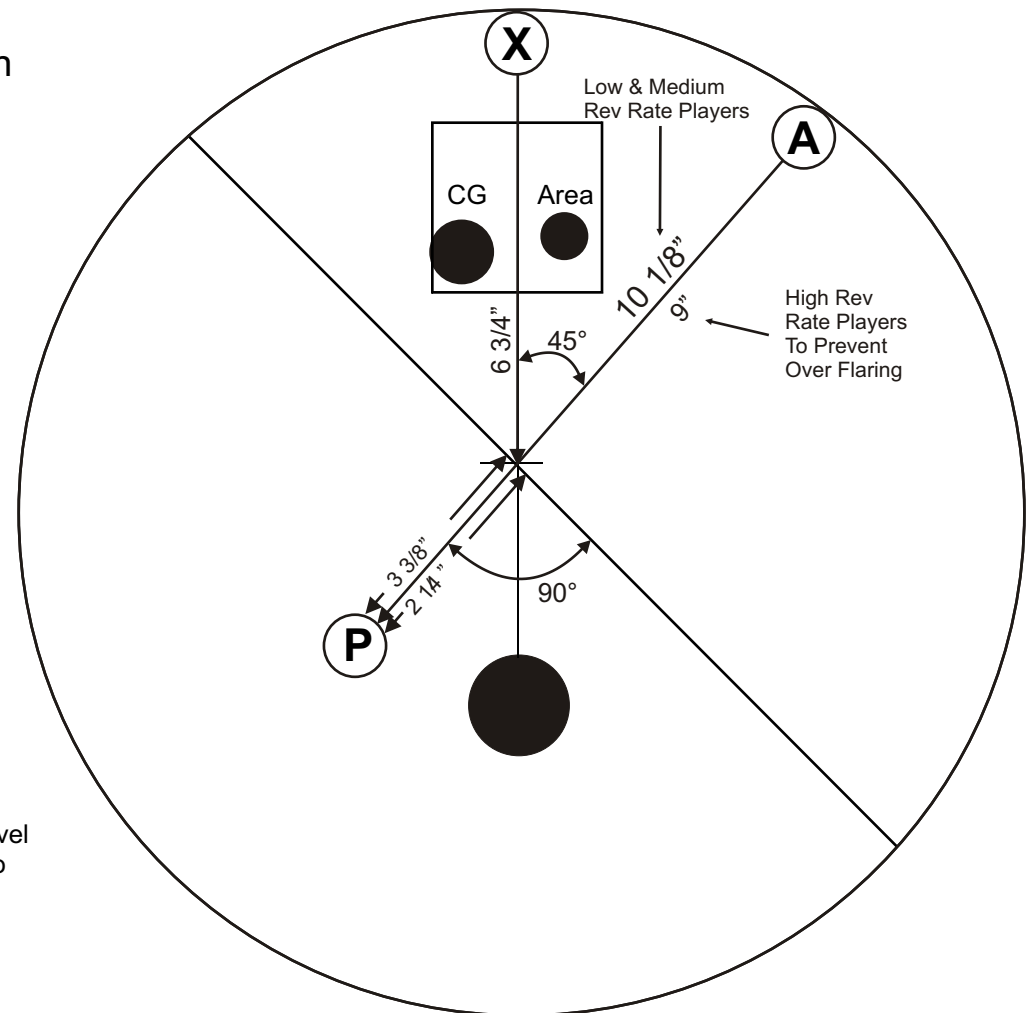


- 1. (P) is the larger circle or pin on the ball that marks the top of the core.
- 2. For left-handed bowlers use the mirror images of these layouts.
- Note: Finger, thumb and X - holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.

Mid-Lane Hook & Back-End - Full Roller

Symmetric Core - RGdiff - 0.040 or greater

- Best pin out distance to use: 4"– 6"
- Before drilling, the ball should balance between 1½ and 2½ ounces of Finger weight.
- X-hole size should be 1 1/8 X 2½ deep.
- This layout helps bowlers open up the mid-lane with a strong continuous back-end



- 1. (P) is the larger circle or pin on the ball that marks the top of the core.
- 2. (X) is where to drill the X-hole on the ball.
- 3. For left-handed bowlers use the mirror images of these layouts.
- Note: Finger, thumb and X-holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.

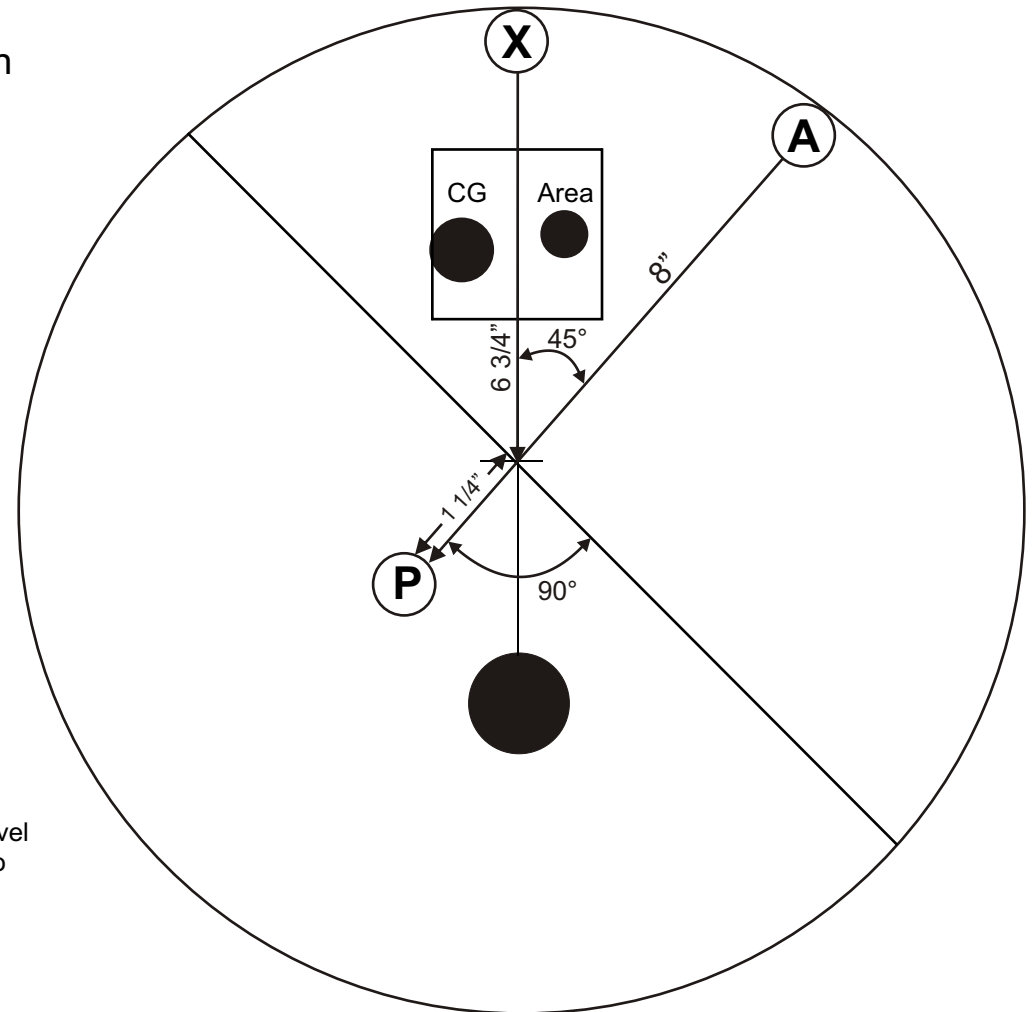
Brunswick

*Dave Ewald
Favorite Layout*

Length & Back-End - Full Roller

Symmetric Core - RGdiff - 0.040 or greater

- Best pin out distance to use: 4"– 6"
- Before drilling, the ball should balance between 1 to 2 ounces of Finger weight.
- X-hole size should be $31/32$ X $2\frac{1}{2}$ deep.
- This layout helps bowlers create length with a strong arcing back-end



- 1. (P) is the larger circle or pin on the ball that marks the top of the core.
- 2. (X) is where to drill the X-hole on the ball.
- 3. For left-handed bowlers use the mirror images of these layouts.
- Note: Finger, thumb and X-holes must have at least a moderate bevel and the riser Pin (P) must be at least one inch from any drilled hole to comply with the Brunswick warranty.