

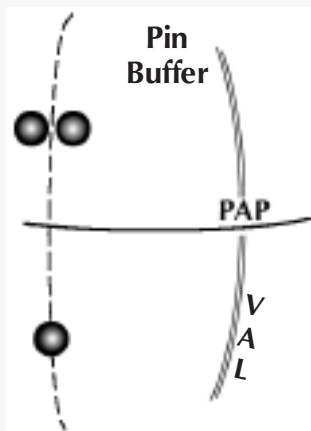


# ASYMMETRICAL Drilling Guide

DRILLING INSTRUCTIONS  
FOR BALLS WITH A STRONG PREFERRED SPIN AXIS

## DEFINITIONS

### Pin Buffer -



Horizontal distance between Pin and Vertical Axis Line

- Determines the 'Angularity' of the ball motion  
(smaller distances *increase* the angle off the break point)

### Vertical Axis Line (VAL) -

The line that runs vertical to your grip midline through your Positive Axis Point (PAP)

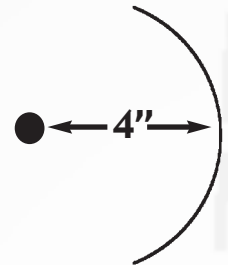
## LAYOUT PROCEDURES

### STEP 1

Choose a layout based on desired ball reaction.  
(Example: 4x4 means a pin 4" from the PAP and mass bias 4" from the PAP. This layout is very aggressive.)

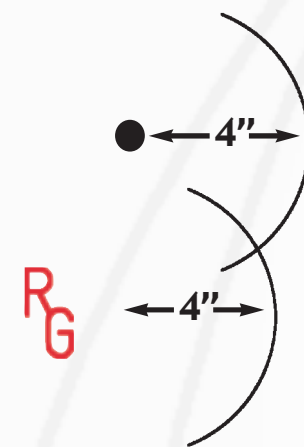
### STEP 2

Draw an arc around the pin that corresponds to the desired pin distance to the PAP.



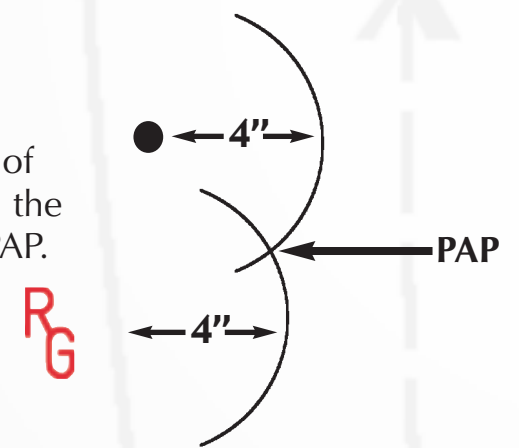
### STEP 3

Draw an arc around the mass bias that corresponds to the desired mass bias to the PAP distance.



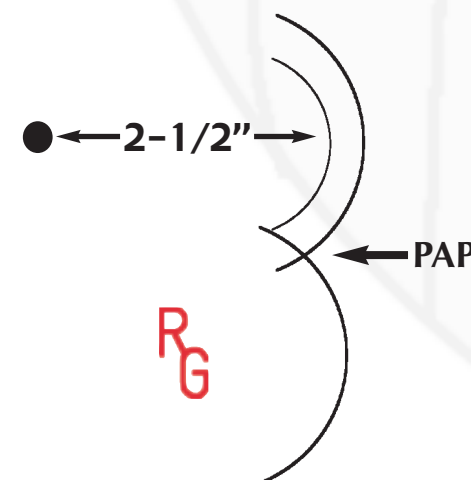
### STEP 4

The intersection of these two arcs is the location of the PAP.



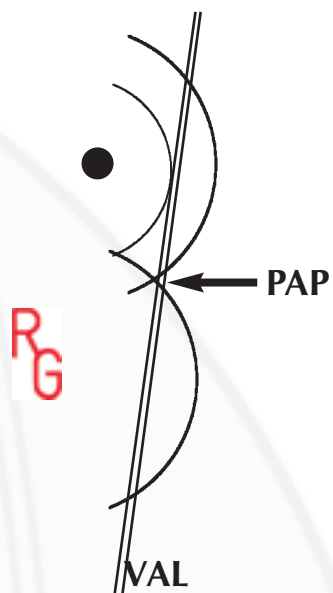
### STEP 5

Choose the desired pin buffer distance and draw that arc around the pin as well.  
(You will now have two arcs around the pin and just one around the RG.)

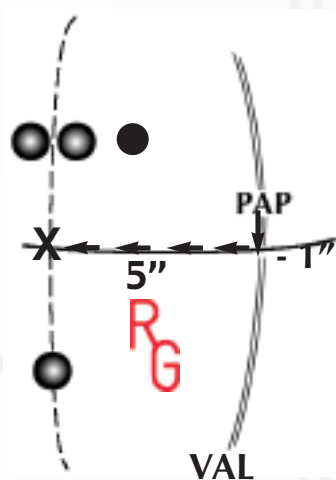


**STEP 6**

Draw a line tangent to your second arc and through the PAP. This is your VAL.



**STEP 7**



Measure backwards from PAP to determine grip midline and center line. (Example: If PAP is measured to be 5" right and 1" up, then measure down 1" along VAL and 5" left. You have now located the grip center.)

**STEP 8**

Draw where your fingers will be located. If the pin is too close to the fingers, adjust accordingly to give adequate distance between the pin and finger holes. This will only change your pin and mass bias to PAP location slightly.

**STEP 9**

Drill and scale the ball to determine the need, if any, for a balance hole. If one is needed, see instructions on back page.

**~ ROTO GRIP LEGEND ~**

- = Major Pin
- ✦ = Center of Gravity (CG)
- PAP = Positive Axis Point
- ⊗ = Balance Hole
- = Ball Track
- == = Vertical Axis Line (VAL)
- RG = Mass Bias – used for “fine tuning”

**FAQs**

**Q.** *Is it okay to drill into the engraved portion of ball that indicates the location of the mass bias?*

**A.** Drilling extra hole or thumb hole into the RG only enhances the dynamics of the weight block.

**Q.** *Is it okay to drill into the pin?*

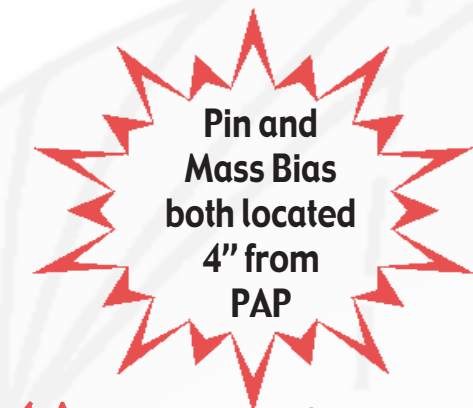
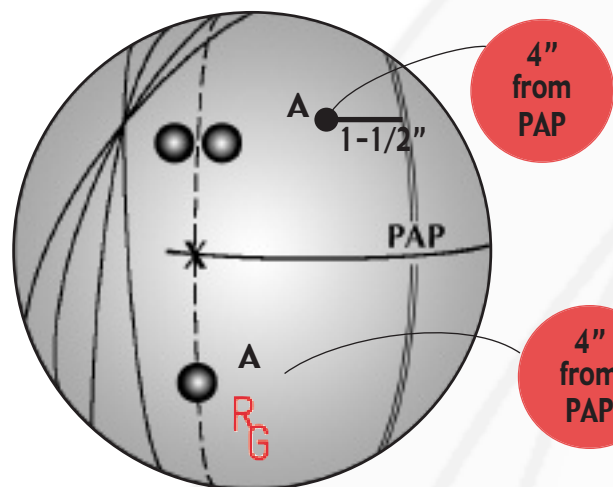
**A.** It is okay as long as you drill out the entire pin. If you drill out just a portion of the pin, or drill too close to the pin, you will create a weak portion of the shell which may ultimately result in fracturing of the cover stock.

	WORKS WELL		
<b>POSITION A – Most ‘Flip’</b>	High Track	Forward Roll	Pin Out (3" - 5")
<b>POSITION C – Smoother Reaction</b>	Low Track	Side Roll/Spin	Pin In (1" - 3")
<b>POSITION B – Great All-Around</b>	All Types of Players		All Balls

**Maximum Flare!**

**4 x 4 "Strong Hook"**

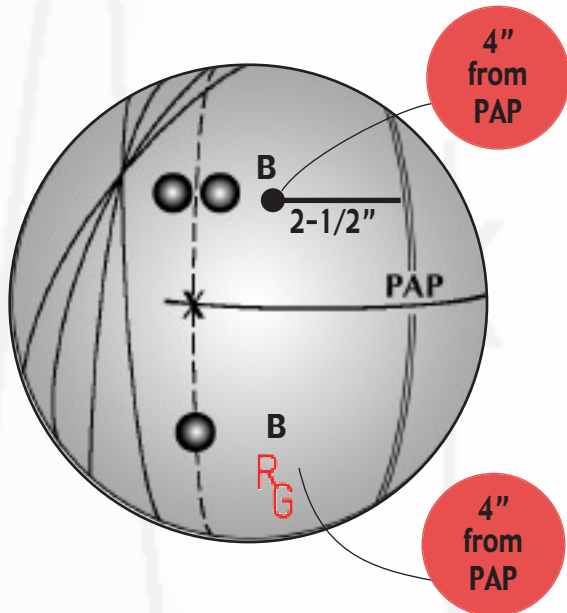
<b>A</b>	PIN BUFFER 1-1/2"
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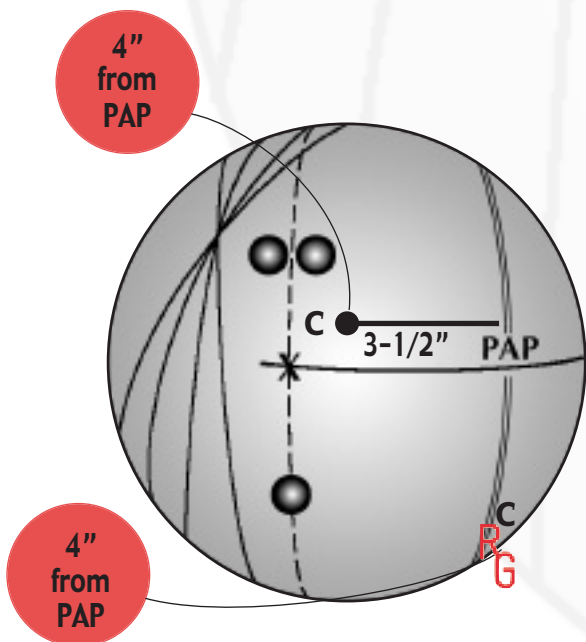
- 4 A**
- Increases dynamic potential
  - Creates sharper breakpoint
  - Pin utilizes 1-1/2" buffer (flip)

<b>B</b>	PIN BUFFER 2-1/2"
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- 4 B**
- Maintains dynamics
  - Strong continuation through pins
  - Pin utilizes 2-1/2" buffer (arc)



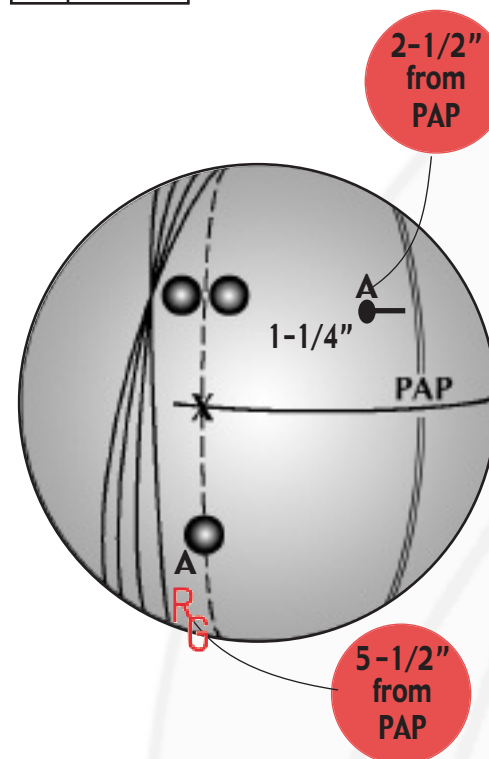
- 4 C**
- Increases predictability
  - Great for heavy oil
  - Pin utilizes 3-1/2" buffer (control)



<b>C</b>	PIN BUFFER 3-1/2"
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PLEASE NOTE: Because all bowlers have different positive axis points (PAP) your layouts may not have the same appearance as those illustrated above.

<b>A</b>	PIN BUFFER 1-1/4"
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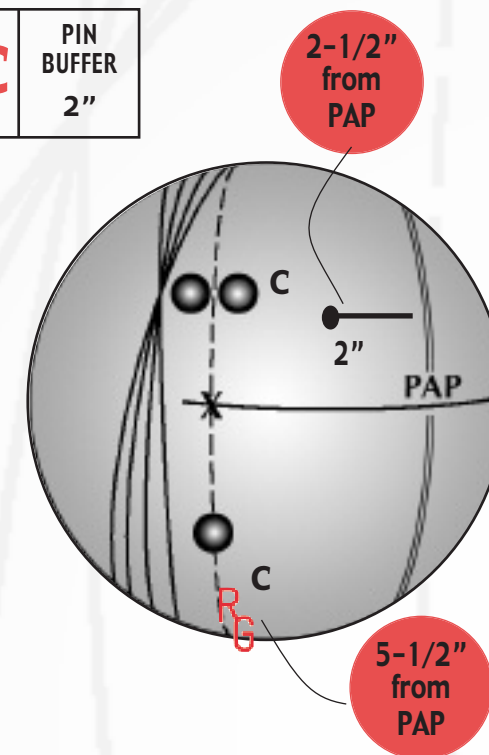
**2 - 1 / 2 A & C**

- Produces less flare for increased stability and control!
- Creates less entry angle and a more predictable ball path
- Works well on 'Wet/Dry' - both front-to-back side-to-side - lane conditions
- Higher "rev" players love this layout

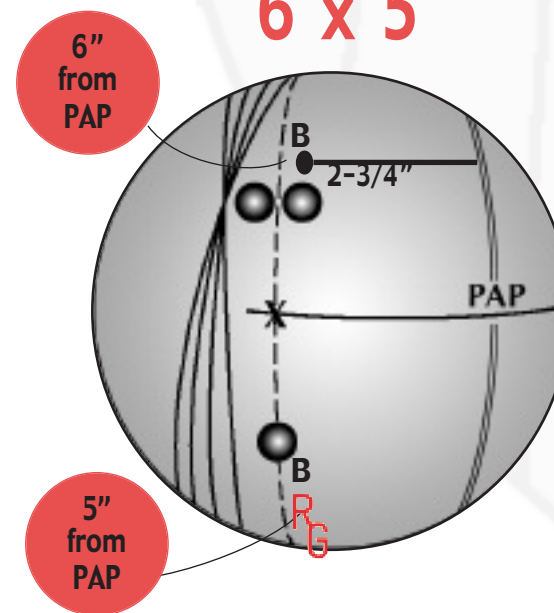
**2-1/2 x 5-1/2**

**Great for Wet/Dry lanes with drier backends!**

<b>C</b>	PIN BUFFER 2"
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**6 x 5**



<b>B</b>	PIN BUFFER 2-3/4"
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**Great for 'Crankers'**

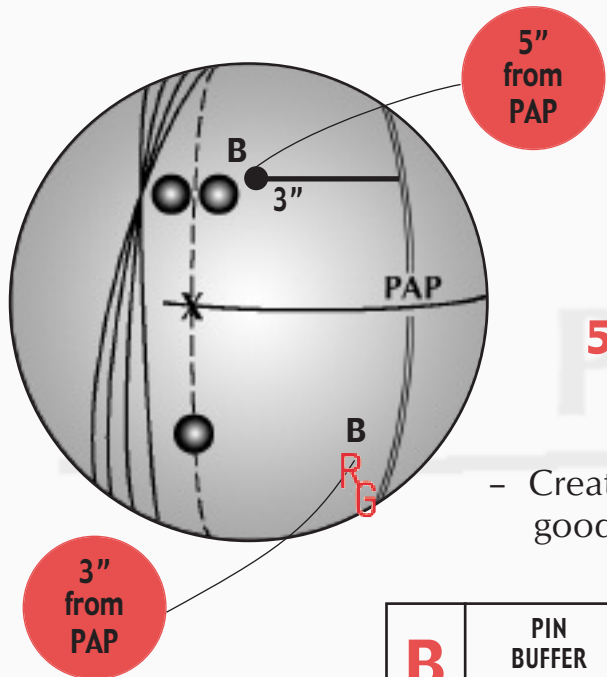
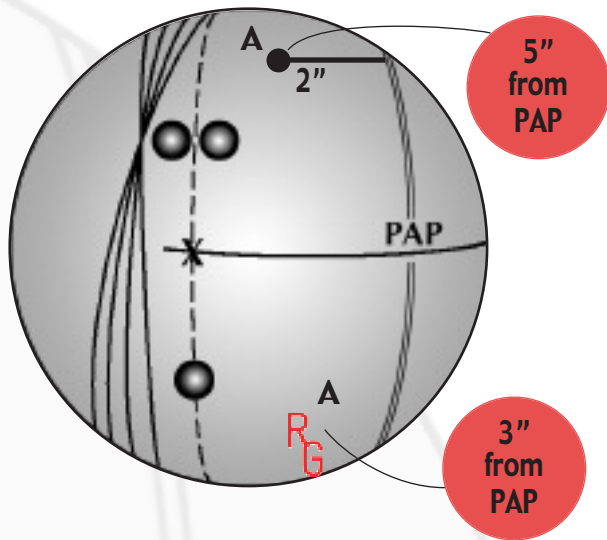
- 6 B**
- Creates medium flare with stability through the heads
  - Pin utilizes 2-3/4" buffer
  - Works well on the 'Deep Inside' line

PLEASE NOTE: Because all bowlers have different positive axis points (PAP) your layouts may not have the same appearance as those illustrated above.

# 5 X 3

## A Must For Every Bowler

<b>A</b>	PIN BUFFER 2"
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**5 A** - Produces higher entry angle that works well on many different lane conditions

**5 B** - One of the most popular layouts on the PBA tour

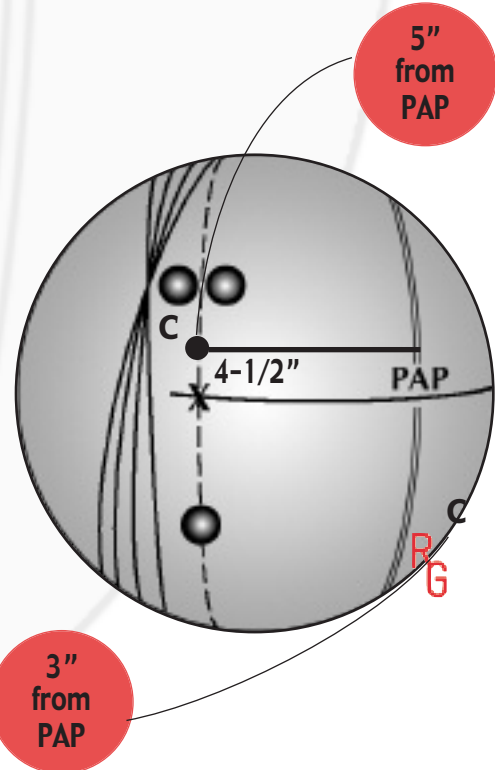
- Creates strong ball motion with good continuation

<b>B</b>	PIN BUFFER 3"
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## Spinner's Dream Layout

**5 C** - Glides through the heads and unleashes a powerful move at the breakpoint

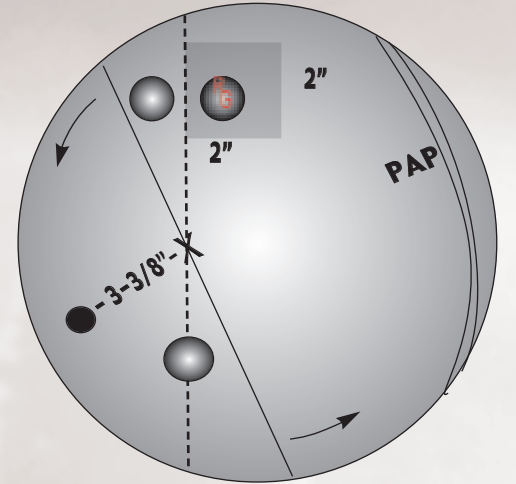
<b>C</b>	PIN BUFFER 4-1/2"
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# FULL ROLLER

- ★ Locate pin 3-3/8" from grip center at a 45° angle from center line in southwest direction.
- ★ Locate RG inside shaded 2" square box near ring finger.
- ★ Use scale to determine static balance. If necessary, use extra hole.



# BALANCE HOLE INSTRUCTIONS

- #1** Draw a line from grip center through center of gravity and extend to VAL. Place balance hole in this location.
- #2** Determine the size and depth of balance hole. It is recommended that you target 3/4 positive side and allow the customer to roll the ball as such.

**REMEMBER:** If you need to remove more positive side weight, you can ALWAYS select a larger drill bit or drill deeper with the initial drill size.

