

Drilling Instructions

Core Design:	Spike Symmetric Mass Bias				
Mass Bias Strength:	0.022				
Mass Bias Location:	6 3/4" from the pin				
Coverstock Name:	Traxion Reactive 0.30				
Oil Absorption Rate:	11.9				
Color:	Purple/ Black/ Gold				
Box Finish:	4000 Grit Abralon / Polished with Powerhouse Factory Finish Ball Polish				
Length: (Ebonite scale of 1 to 50, earliest to latest)	24				
Overall Hook: (Ebonite scale of 1 to 50, least to most)	45				
Breakpoint Angle (Ebonite scale of 1 to 15, most smooth to most angular)	12.95				
RG Values:	16	15	14	13	12
	2.51	2.5	2.49	2.59	2.62
Differential Values:	.043	.051	.039	.043	.046



Drilling clarifications for The One & TOTAL NV

There have been questions regarding the layouts for drilling The One. We wanted to take the time to clarify some of these issues for you.

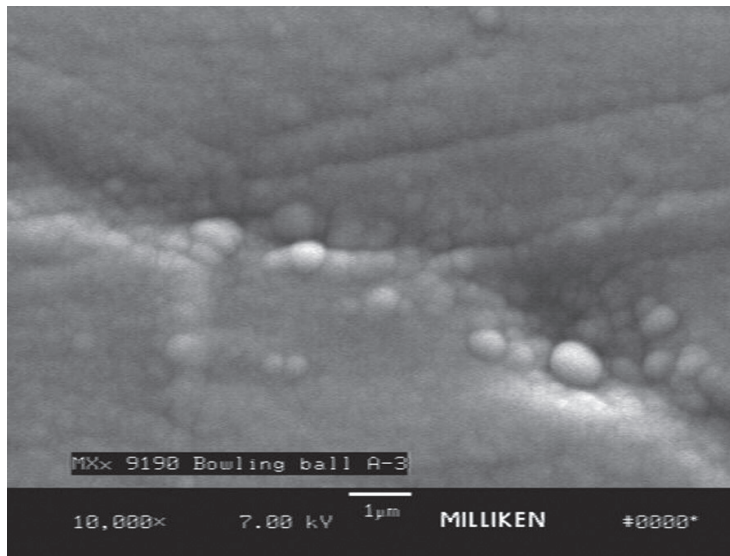
- 1) "I cannot drill Ebonite's factory recommended layout #1 with a 0-1 or 1-2" pin"
Answer – Yes, you certainly can. With short pins, you are looking to remove the amount of static finger weight in order to be compliant with USBC regulations. We suggest that you drill your finger holes deeper than normal, deep enough to be compliant with USBC guidelines. Also, balance hole placement is important to consider when trying to have a ball comply with USBC static weight guidelines. You can position a balance hole to accomplish finger weight removal as well as side weight removal. It is important to note that the Centrex Symmetric Mass Bias Core was designed to be drilled into. You will not alter ball motion drastically by executing these suggestions.

Ball Reaction: Long and Strong

Suitable for: Most Styles

Flare Potential: Medium

Image I TOTAL NV Coverstock Magnified 10,000 X



The Coverstock:

In our continued pursuit to be the innovator in coverstock technology the R&D Chemist team at Ebonite International has identified another component of coverstock performance. This new component is called coverstock texture, and we have found that we can now enhance backend ball motion independent of oil absorption by manipulating this component. Meaning that we now have two ways to increase backend ball motion, we can use oil absorption and/or coverstock texture.

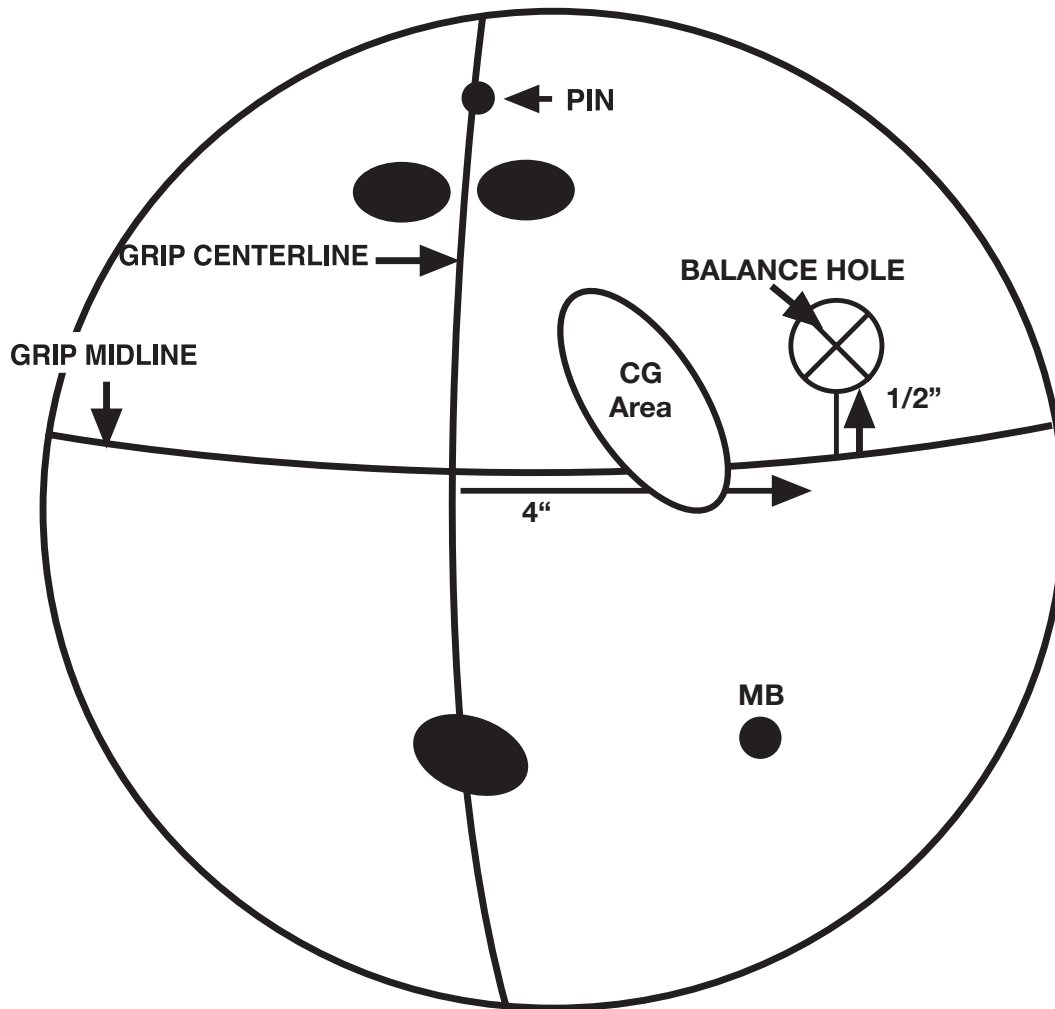
With the new NV series we will begin exploiting coverstock texture which is the amount of microscopic texture the cover has. This surface texture can be seen using a Scanning Electron Microscope or SEM picture and is not affected by sanding or polishing using Ebonite Powerhouse products or Abralon Pads. Similar to oil absorption, we have created a scale for coverstock texture for all reactive balls that starts at 0.01 and currently does not have an upper limit.

The name of the new coverstock used on the TOTAL NV is called Traxion Reactive 0.30. The development of this coverstock is the result of a new formula creation process that utilizes indexing to manipulate the amount of coverstock texture. The results of this process are a coverstock with significantly stronger back-end ball reaction than previous reactive coverstocks along with improved consistent performance in moderate carrydown situations. As we discussed with the introduction of The One, oil absorption is still an important part in performance when we are creating backend ball motion. When looking at the technical specs of the TOTAL NV you will see that we have posted the oil absorption rate, along with a coverstock texture rating. To highlight this new measurement we will post the rating of the amount of texture in the name of the coverstock, Traxion 0.30. The TOTAL NV does come factory polished with Powerhouse Factory Finish Ball Polish, so please be certain to adjust your TOTAL NV accordingly.

Please keep in mind that all bowlers have different needs. Do not be afraid to ask your pro shop operator to alter the surface of your ball if it does not match up perfectly.

Ball Care:

Ebonite strongly suggests that by using Abralon Pads as well as Ebonite Powerhouse products, you will find that there are not many conditions that the NV will not fit, aside from extreme dry lanes. As far as cleaning, we recommend that you use Ebonite Powerhouse Energizer Ball Cleaner. As your ball starts to decrease in performance, you may need to refresh the cover with the Ebonite Hook Again System.



This is the **recommended** layout for most players, with or without a positive axis point. Use mirror image for left handed drilling.

Drilling #1

If you do not have a positive axis point, use this layout.

Ball Reaction: Long and Strong

Suitable for: Most Styles and Lines

Flare potential: Medium

Center of Gravity: The center of gravity placement may or may not fall inside the CG Area. If it doesn't then the balance hole location may need to be adjusted.

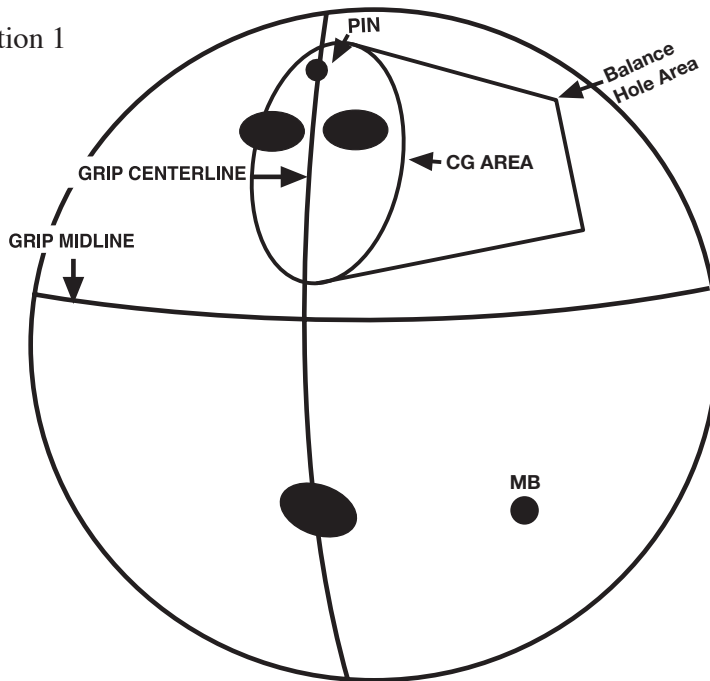
Mass Bias Placement: Place Mass Bias 3 inches to the right of the thumb hole

If needed place balance hole 4 inches over and $\frac{1}{2}$ inch up and drill back to statically legal.

Center of Gravity: As the CG area will fall close to the finger area, and perhaps above the fingers, drill fingers deeper than normal to remove the appropriate finger weight.

Balance Hole: A balance hole may be required in order to remove the necessary finger weight. Position the hole accordingly.

Illustration 1



2) I need to have the CG in line with the Pin and Mass Bias

Answer – No, that is not the case. Place the Pin and Mass Bias in the desired locations for the bowler. After drilling the ball, determine if a balance hole is required, and where you might like to place it. For example, if the CG is off line to the right (for a Right Hand Bowler) you may have to place a balance hole to the right along the Center line. We generally recommend that you place this hole over 4 inches and up 1/2 inch. The depth of the hole and size of the bit will be determined by the amount of weight you desire to remove. We will show 2 illustrations. 2A will be if the CG area is off to the right of center, and 2B will show the CG area off to the left. In the case of the CG off to the left, the CG will most likely end up in the grip area, thus, no balance hole required.

Ball Reaction: Long and Strong

Suitable for: Most Styles

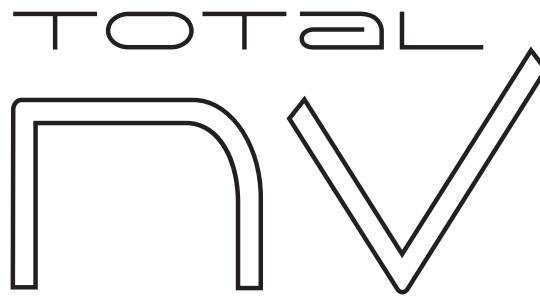
Flare Potential: Medium

Center of Gravity: Not in Line with the Pin and Mass Bias.

Mass Bias Placement: Place Mass Bias 3 inches to the right of the thumb hole.

- 4) My One does not hook as much as expected!!!
Answer - The effects of sanding The One & TOTAL NV are extreme. As stated in the seminar presentation, GB Series is in fact, the strongest covers in bowling today. By sanding the balls, you can increase the overall hook by quite a bit. The following are ESTIMATED differences between the original factory finish (4000 Grit with Factory Finish Polish):
- a. 4000 Grit – No Polish – 2 Boards More Hook – 6 Inches earlier ball motion
 - b. 2000 Grit – No Polish – 4 Boards More Hook – 9 Inches earlier ball motion
 - c. 1000 Grit – No Polish – 6 Boards More Hook – 12 Inches earlier ball motion
 - d. 500 Grit – No Polish – 8 Boards More Hook – 15 Inches earlier ball motion
- DO NOT BE AFRAID to alter the surface!!!!**
- 5) My ball does not perform as it did when it was new:
Answer: The ball is shipped with a factory finish of 4000 Grit Abralon, and polished with Powerhouse Factory Finish Ball Polish. As the ball is used, the surface will be altered. Depending on what surface (Wood, Synthetic, the brand of Synthetic, Guardian, etc...) you are bowling on, the ball will start hooking earlier, thus the move to the pocket will be smoother. In order to make the reaction as it was new, you must finish your ball the same way as we do in the factory. Sand your ball with 500 Grit Abralon, 1000 Grit Abralon, 2000 Grit Abralon, 4000 Grit Abralon and shine your ball with Powerhouse factory finish. If you changed the surface at all, remember the steps that were applied so they can be repeated.
- 6) I MUST DRILL The One & TOTAL NV according to the Ebonite Drilling Instructions or my ball will not perform.
Answer – You ***CAN PLACE THE PIN IN OTHER AREAS.*** But you ***MUST PLACE THE MASS BIAS IN THE STRONG ZONE (35-70 DEGREES)*** for optimum performance. Placing the Mass Bias in a weaker location (0-30 and 75-105 degrees) will ***DRASTICALLY REDUCE BACKEND BALL REACTION!!!!*** If this is what your customer is looking for, by all means drill a ball this way. But ***GENERALLY SPEAKING***, most bowlers will be looking for a stronger backend ball motion vs. a weaker backend ball motion.

If you have any questions, please feel free to contact Ebonite International @ 1-800-626-8350 or email to RGJEBONITE@aol.com for e-mail technical support.

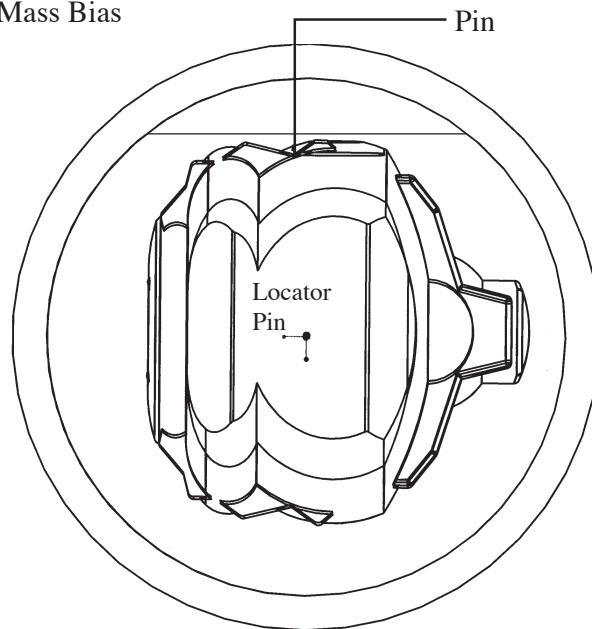


TOTAL NV Drilling Instructions

The TOTAL NV has a Mass Bias Differential value of 0.022. The Mass Bias is 6 3/4 inches from the pin and is marked with a small indicator pin and an Ebonite swoosh on the surface of the ball. Mass Bias degree placements are determined by the angle formed by a line drawn from the pin to the Mass Bias versus a line drawn from the pin to the Positive Axis Point. The placement of the Mass Bias is a secondary influence on determining ball motion. Pin Distance is the most important influence. Mass Bias placements and ball motions for TOTAL NV are recommended as follows:

0 Degree Mass Bias	Very Smooth and Even Reaction
45 Degree Mass Bias	Strong Roll Ball Reaction
75 Degree Mass Bias	Strong and Angular Ball Reaction
90 Degree Mass Bias	Long and Smooth Ball Reaction
135 Degree Mass Bias	Not Recommended Because of Very Little Flare Potential

The Core: Spike Symmetrical Mass Bias



The Core:

The Spike Symmetrical Mass Bias core design is the most versatile core design in production. This core shape has the ability to be both Symmetrical and Asymmetrical in shape; new balls in the TOTAL NV Series will exploit this fact. This new concept will offer drilling options that are new and significantly different than in the past. Note in order to see a performance difference in the Spike core shape a minimum of 31/32 drill bit at least 2 1/2 inches deep must be used. Smaller drill bit or shallower depths will not change ball motion significantly.

Drilling #2

Ball Reaction: Long and Strong

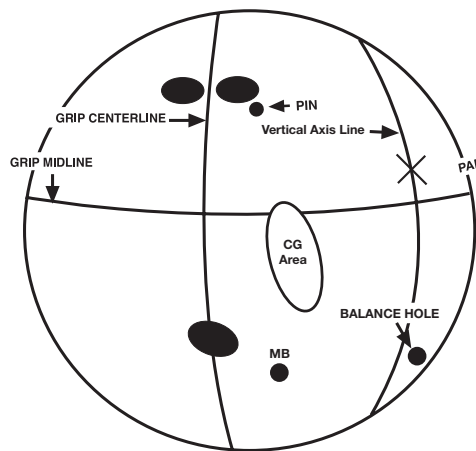
Suitable for: Most Styles and Lines

Flare potential: Large

Pin Placement: Place Pin 4 1/2 inches from PAP

Center of Gravity: The center of gravity placement may or may not fall inside the CG Area. If it doesn't then the balance hole location may need to be adjusted.

Mass Bias Placement: Place Mass Bias at a 45 degree angle to the right of the thumb hole. If needed place balance hole over on the Vertical Axis Line and 2 inches down and drill back to negative side weight. The bigger and deeper the hole is the more increased ball reaction. Remember to keep the ball statically legal.



This layout produces the most even reaction with the highest TOTAL hook.

Drilling #3

Ball Reaction: Early and Strong

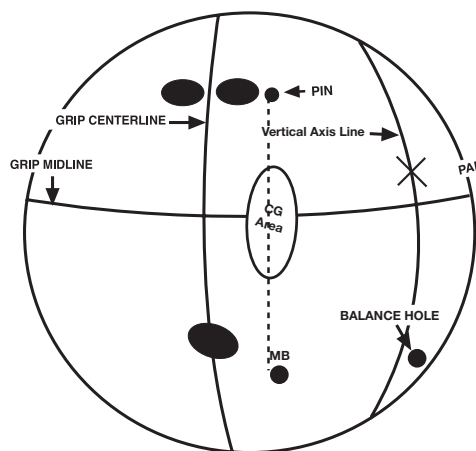
Suitable for: High Ball Speed, Low RPM's, Heavy oiled lanes

Flare potential: Very Large

Pin Placement: Place Pin 3 1/2 inches from PAP

Center of Gravity: The center of gravity placement may or may not fall inside the CG Area. If it doesn't then the balance hole location may need to be adjusted.

Mass Bias Placement: Place Mass Bias in line with the Pin. If needed place balance hole over on the PAP and drill back to statically legal.



This is the recommended layout for All Full Rollers

Drilling #4

Ball Reaction: Strong Arc

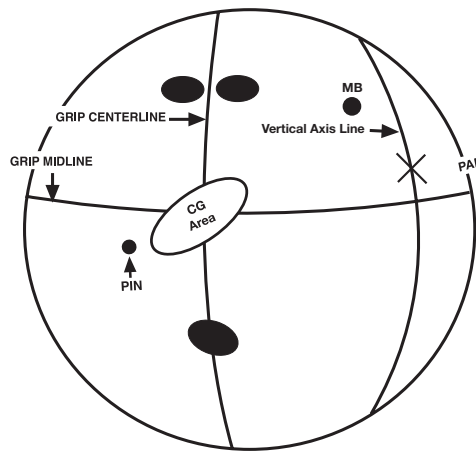
Suitable for: Most Styles and Lines

Flare potential: Large

Pin Placement: Place Pin 3 1/2 inches from bowlers center of span in an 8:00 direction.

Center of Gravity: The center of gravity placement may or may not fall inside the CG Area. If it doesn't then the balance hole location may need to be adjusted.

Mass Bias Placement: Place Mass Bias at a 2:00 direction from the center of span. If needed place balance hole 8 inches from the center of span in a 2:00 direction to remove excess positive side weight. Place balance hole 6 inches from the center of span in a 8:00 direction to remove excess negative side weight.



Balance Hole: In illustration 2A – Place hole in the prescribed area in order to have the ball meet USBC specifications. You may need to drill deep with a large bit if the top weight was excessive.

Balance Hole: In illustration 2B – No Balance hole would be required.

Illustration 2A

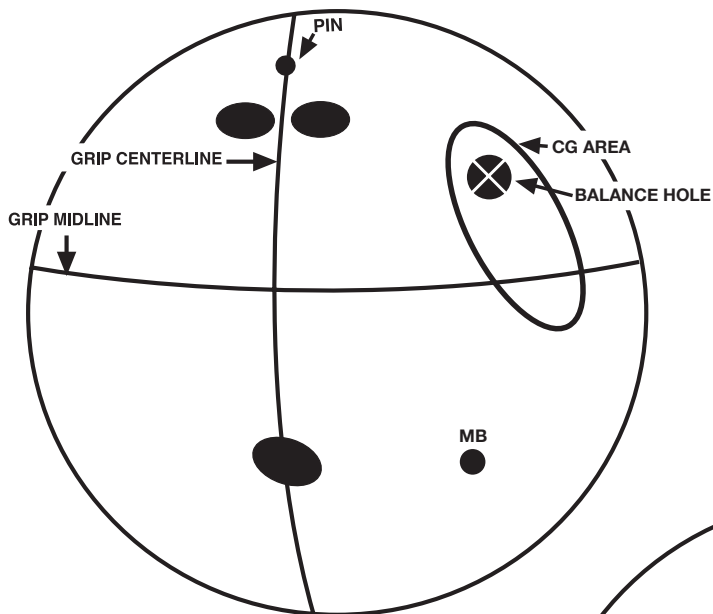
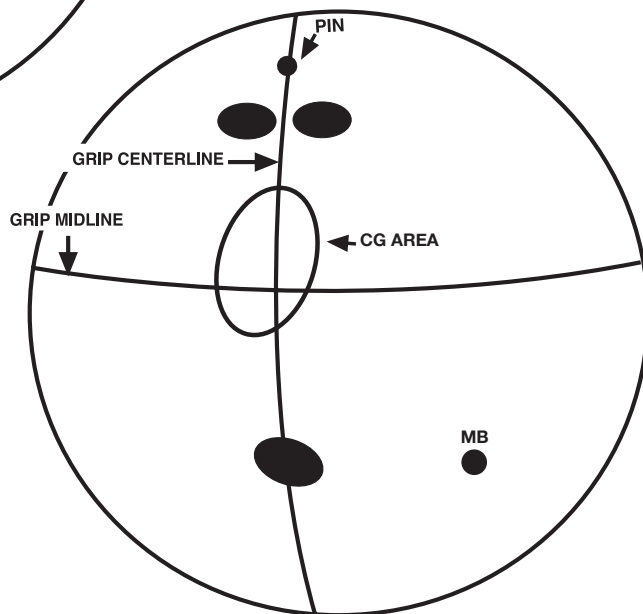


Illustration 2B



- 3) This X-Out that I received has the CG on the other side of the pin.
This ball is undrillable!!!!

Answer – This ball is certainly drillable. Repeat step # 1, and place the weight hole (it may be a large one) in the location that will remove the necessary weight (Above finger for example). In this case, it is also suggested that you drill the finger holes deep as well.

This is a **NON RECOMMENDED LAYOUT**. This layout will produce a very mild ball reaction and is not recommended.

Drilling #5

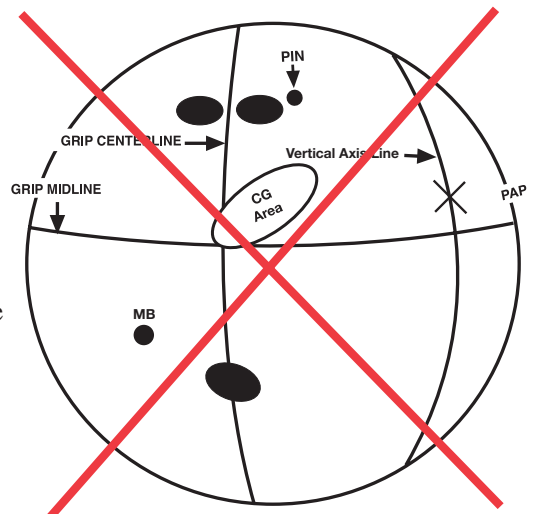
Ball Reaction: Very mild

Suitable for: Extremely high rev rates

Flare potential: Very Small

Pin Placement: Not recommended with this layout

Mass Bias Placement: Mass Bias Placements to the left of the thumb hole are not recommended because of the severe reduction in flare potential.



Trick Tour Layouts

Tommy Jones Favorite Trick Layout

Ball Reaction: Long and most aggressive at the breakpoint for Tommy Jones

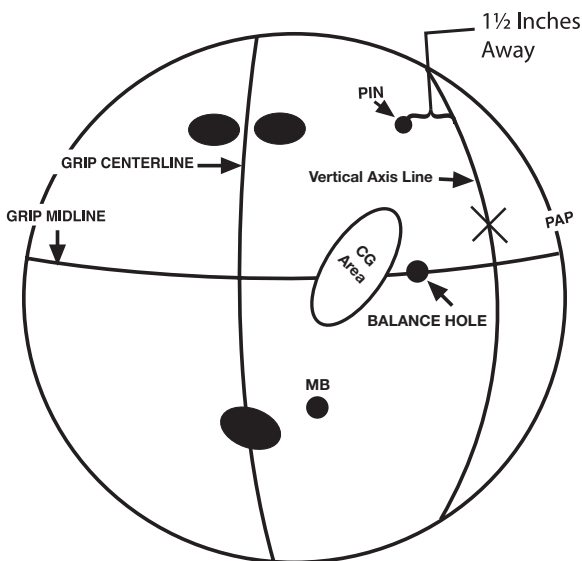
Suitable for: High Rev Rates only

Flare potential: High

Pin Placement: Place Pin 1½ inches away from the Vertical Axis Line and 4½ inches away from the PAP

Center of Gravity: The center of gravity placement may or may not fall inside the CG area. If it doesn't then the balance hole location may need to be adjusted.

Mass Bias Placement: Mass Bias Placement at 80 degree angle to the right of the thumb hole. If needed place balance hole approx 4 inches to the right and drill the ball back to statically legal



Jason Couch Favorite Trick Layout

Ball Reaction: Long and most continuous for Jason Couch

Suitable for: High Rev Rates only

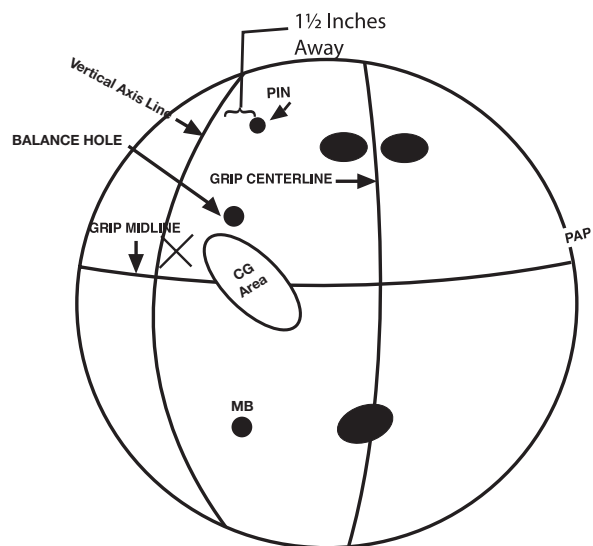
Pin out distance must be at least 3.5 inches out.

Flare potential: High

Pin Placement: Place Pin: 1½ inches away from the Vertical Axis Line and 5¼ inches away from the PAP

Center of Gravity: The center of gravity placement may or may not fall inside the CG area. If it doesn't then the balance hole location may need to be adjusted.

Mass Bias Placement: Mass Bias Placement at 60 degree angle to the left of the thumb hole. If needed place balance hole approx 4 inches to the right and 1 inch up and drill the ball back to statically legal



FAQ's

for

THE ONE & NV Series

on Back.



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