

A CRASH COURSE IN SPEAKING BALL TALK

We break down our ball reviews piece by piece



BTM started the process of reviewing bowling balls in 1995. We were the first publication to publish lengthy, independent studies on how different bowling balls reacted while traversing sixty or so feet of plastic or wood. The ball review process at BTM has evolved over the years as has ball technology itself. It has been our constant goal to provide as much information as possible to our readers, so that they can make the most informed choices possible. All of the changes involved in this evolution have one thing in common. They were made with you, the reader, in mind. Readers themselves calling in, writing or emailing have suggested many of the changes. Others were made because it became apparent that our readers were being deprived of information that we were capable of providing. Some came about because a method or idea was agreed to by most or all of the ball manufacturers, enabling us to be as consistent with our rating systems as possible. But we still had you, the reader, in mind when implementing these new processes.

In a general consensus of bowlers, manufacturers, and pro shops, we implemented using three different testers in 2002. We use three bowlers with three contrasting styles to test balls. We do this on four different oil patterns. (Our four patterns are: Oily 44 ft.-close to the Kegel High Street Pattern, Medium 41 ft.-close to the Kegel Main Street Pattern, Dry 38 ft.-close to the Easy Street Pattern and a Sport Pattern 39 ft.-close to the Kegel Winding Road Pattern. We feel this is more comprehensive and reliable than one bowler testing balls with whichever releases or styles are in his repertoire.

In an effort to clear up any misconceptions or confusion about the ball review process, in this article, we will attempt to walk you through the entire process, explaining the terminology we use as we go. This glossary of terms is always available on our website at www.bowlingthismonth.com.

NOTES



On the Notes page, immediately preceding each month's ball reviews, we provide C.A.T.S. findings on all three of our ball testers. In the reviews, we refer to them as Cranker, Tweener and Stroker. As we have done for the last several years, the torque, length, back end and total hook ratings will be done on Tweener's test shots, using a stacked leverage layout on our medium condition. The drillings thrown by Cranker and Stroker, as well as any others tried by Tweener, will be suggested by the manufacturers themselves. When the manufacturer doesn't suggest particular layouts, we use the bowlers' favorite layouts.

LINE BY LINE

Now, we will take each section and line from our ball review form and explain what it means, what we do to observe that particular characteristic and how we arrive at the rating provided. Much of the technical information is provided by the ball companies. So, let's get started.

TESTER RATINGS

Here, the ball is rated by each tester on each of four patterns. Stroker's ratings are shown in yellow, Tweener's in Red, and Cranker's in Blue.



GENERAL INFO

Coverstock

Name: Trademark name provided by the manufacturer. Some don't have one. If so, we print: None

Type: Reactive solid, pearl, particle, hybrid, etc. If particle, we denote whether Light, Medium, or Heavy Load. This is the manufacturer's interpretation. We aren't into chemical analysis... yet. (Ex: Ebonite's light load might differ from Storm's light load)

Box Finish: Also provided by the ball maker. We do alter the surface during testing, but the ratings are done on the box finish. Some manufacturers provide a degree of polish or grit, others simply state polished, dull, compound, etc.

Color: Provided by the manufacturers.

Core

Core density: This generally describes how many different pieces are combined to make up the core of the bowling ball being reviewed.

Enhanced mass bias: The strength of the enhanced mass bias is given here on all asymmetrical balls.

GENERAL INFO

Coverstock
 Name: Cytoplasmic Reactive Solid
 Type: Reactive Solid
 Box Finish: 2000 Abralon
 Color: Turquoise/Navy/Black

Core
 Density: Dual
 Enhanced Mass Bias: .018
 Asymmetrical

Lane Conditions
 Brunswick Pro Anvil Synthetic Lanes
 Kegel Patterns used in tests:
 Oily: 44' oil (High Street)
 Medium: 41' oil (Main Street)
 Dry: 38' oil (Easy Street)
 Sport: 35' oil (Winding Road)

Drillings
 4" x 3" (2" pin)
 Stacked leverage (3" pin)
 4 1/2" x 4" (2" pin)

Lane Conditions

The first thing listed here is the type of lane, whether wood or synthetic. The oil length and general amount of oil for each lane pattern will also be provided here in the following order: Oily pattern-42' oil (50 units in center)

Medium pattern-40' oil (35 units in center)

Dry pattern-38' oil (30 units in center)

Sport pattern- 40' oil (30 units in center)

Drillings

We list all of the drillings used during the review. Stacked leverage is used by Tweener to determine the torque, length, back end and total hook ratings. Pin out distance is also listed here and the diagrams should reflect that distance. 5"x5" (2" pin) for example, means that the pin and the CG are both five inches from that bowlers PAP (positive axis point) and the pin is two inches from the CG. A diagram of each layout is shown below the drillings with weight hole, where appropriate. On asymmetrical balls, the mass bias (MB) location is noted also.

SPECIFIC RATINGS

RG (Radius of gyration)

It essentially is an indication of the resistance to rotation motion. It is equal to the square root of the moment of inertia divided by the weight. USBC limits are 2.430 – 2.800.

A low RG ball will be easier to "rev up" and it will rev faster, quicker because most of the mass is located closer to the center of the ball. It will want to hook sooner. Medium RG balls are harder to spin (takes more power), so most bowlers will see a slightly loping action through the heads. High RG balls are the hardest to spin, since the mass is concentrated farthest from the center and therefore, bowlers will usually see longer lope, much later revving, and the latest hook. We are provided the lowest RG by the manufacturer. Our table is used to convert this to a more familiar 1-10 scale.

LOW	MEDIUM	HIGH
1= 2.430 to 2.465	4= 2.536 to 2.570	8= 2.676 to 2.710
2= 2.466 to 2.500	5= 2.571 to 2.605	9= 2.711 to 2.745
3= 2.501 to 2.535	6= 2.606 to 2.640	10= 2.746 to 2.780
	7= 2.641 to 2.675	



This part of the test involves the tester(s) taking their normal deliveries and just observing the revving action as the ball comes off the bowlers hand and how easily the ball clears the heads. Different parts of the lane are used, so as to observe any differences in the ball's path through heavy oil and light oil. Sometimes, a low RG ball will lope a little more than expected or a medium RG ball will rev a little faster. These observations are then noted in this section of the ball review.

Diff/Flare (Differential/Flare)

Diff/Flare: The Differential is most accurately stated as the differential of RG, an indicator of flare potential. The higher the differential, the more versatile the interior of the ball is. It can indicate just how much of a length adjustment can be made through drilling. This can vary from 1-2 feet in a low diff ball to 7-8 feet in a high diff ball. Notice that we said "an" indicator and not "the" indicator of flare potential. Other factors that can contribute to flare include the RG, lane condition, and bowler's release. Flare is created as the ball migrates from its release axis toward its preferred spin axis. Large flare can noticeably reduce the length potential of the ball. Larger flare is generally considered an asset for playing oilier lanes, because the ball is presenting a fresh, dry surface on all successive revolutions. While on oil, this means little, although some ball companies disagree. But when the ball crosses from the oilier boards to the drier boards, the ball surface bonds with the drier lane to increase the coefficient of friction, which causes earlier hook and greater total hook. That is, earlier and greater hook when compared to a smaller flaring ball. Smaller flaring balls give the bowler better length and later hook. Also, contributing to flare is the position of the core relative to the bowler's release axis.

LOW	MEDIUM	HIGH
1= .000 to .008	4= .025 to .032	8= .057 to .064
2= .009 to .016	5= .033 to .040	9= .065 to .072
3= .017 to .024	6= .041 to .048	10= .073 to .080
	7= .049 to .056	

Track flare is the migration of the ball track from the bowler's initial axis (the axis upon release) to the final axis (the moment of impact with the pins). Track

3.4 RG: The new Nucleus core features a medium RG rating and a medium strength mass bias. The core provides moderate revs throughout the entire lane.
Scale: 1-10+

8.0 Diff/Flare: The flare potential of the Cell is well over six inches. Cranker had the most with over six, while Stroker had four, and Tweener achieved five inches. The flare was spread evenly throughout the entire lane.
Scale: 1-10+

6.0 Torque: The new core/cover combination provides a strong, continuous motion from start to finish. The breakpoint is strong, but takes nothing away from the Cell's ability to recover at the back end.
Scale: 1-10

10 Length: The 2000 Abralon finish makes this Roto Grip release useful on both medium and large volumes of oil. Those with above average rev rates will have their best look on the heavy stuff, while those with lower rev rates will need a touch more friction from the lane.
Scale: 1-25

15.5 Back End: The predictability of the Cell's breakpoint allows the user to send this one deep into the friction, allowing for a heavy arcing back end reaction.
Scale: 1-20

52 Total Hook: There have been balls from Roto Grip that have covered more boards than the Cell, but we haven't seen one quite as versatile. Don't be afraid to try it on anything from medium to heavy oil conditions.
Scale: 1-100

Comments: Everything about the Roto Grip Cell is new. The Cytoplasmic Reactive Solid cover is Roto Grip's newest coverstock. It offers an ideal amount of friction in the front as well as the back end of the lane. The Nucleus core is a new design as well. This core and cover compliment each other extremely well. The overall ball motion is both strong and versatile, giving the ball the ability to handle a wide variety of lane conditions for all styles of play. Those with above average revs rates will have the best look on oilier conditions, while Stroker types will like it best on medium patterns. On our oily test pattern, both Tweener and Cranker were able to make small swing shots, experiencing a strong, continuous ball motion. Stroker's

flare is a length modifier. It is used to expose fresh, dry ball surface to the lane surface, the entire length of the lane. While on the oil, this means less to the performance of the ball, but when the ball crossed from oil to the dry, the dry ball surface bonds with the dry lane surface to increase friction, which causes earlier hook and greater overall reaction.

Torque

Scale 1-10. This refers to the smoothness or flip-piness of the ball from the breakpoint to the pins. A high torque ball will flip the most; a low torque ball will have the most even break. Players who generate more torque through their release generally like balls with less torque. Bowlers who are "roll" bowlers generally have more success with higher torque balls. Remember, this category does not measure the amount of hook, only the shape of it. Here is the hitch. Not everything is dependent on the shape of the core. No matter what you talk about in bowling, you can't discount the bowler's release, the surface of the ball, or the condition on which the ball is rolling. Bowlers who release the ball with leverage will see more flip than bowlers who either miss the shot or just roll the ball off their hand. A shiny ball will generally be more flippy than a dull ball. An oily lane will create more flip than a dry lane. A taller core shape will usually

be more flippy than a round, fat core. Cores with flip blocks will flip more than those without them. Also, asymmetrical or offset cores have more flip potential than bilaterally symmetrical cores. Be careful here though, if the blocks or the piece creating the offset are not dense enough to significantly influence the RG, they also would not be dense enough to move the core torque potential into the upper ranges. Core torque is basically, what's sticking up, what's sticking down and what's sticking off to the side. Torque is another factor, but truthfully, you can't use "core torque" by itself in any way. You can use it to adjust back end. If the ball is making a move that is clearly too sharp, you change to something that is lower in torque, something that has otherwise similar dynamics, but loses rotation sooner. If your ball is hitting flat, you might want to change to something higher in torque. To pretend that it is absolute and extends to all situations would be deceptive.

Here, Tweener, once lined up on the pocket, repeats strike shots over and over, and observations are only made on the angularity of the ball reaction. Nothing else matters here. Judgements are not made on the amount of hook or results. Only the shape of the hook from the breakpoint to the pins.

Length

Years ago, BTM rated balls in the length section according to how long they went after leaving the oil and contacting dry. Prior to that, technology was such that it was thought that all balls skidded in oil. However, due to the rapidly advancing aggressiveness of today's coverstocks, this assumption is no longer true. All balls do not skid in oil...at least they don't all skid on playable quantities of oil. Some balls now will stop skidding, start rolling and actually hook in quantities of oil that were previously impenetrable.

That said, we wanted a lane condition that would show a wide range of separation between the longest balls and the shortest balls and would show varying amounts of ball skid in between. For the length testing, we put down two loads of lane dressing from 0-10 feet. We buff to 38 feet on a completely dry lane and apply no oil on the return trip. All of the ratings on this pattern will be by Tweener with a stacked leverage drilling as will be the other subjective ratings.

This pattern gives us 48 feet of skid with a plastic ball and 23 feet of skid with our most aggressive particle ball. That 25 feet of separation is what we will

base our length ratings on. Remember, the numerical rating (0-25) will be measuring the amount of skid on our "special" lane pattern only. Obviously, you would get much longer skid figures if you tested a ball on your league or tournament shot. But, this way, we can compare balls to each other in a more objective, technical way than previously. Other characteristics or observations about length might be mentioned within the text part of the length rating section.

Back end

Back end is the amount of hook from the breakpoint to the pocket. This does not reflect the sharpness or smoothness of the hook (which is torque potential). So, a flippy ball that breaks later and an even-rolling ball that breaks earlier could have a similar back end rating, even though their angles to the pocket and carry potential may differ. Back end only evaluates the ball's performance based on the number of boards that it crosses relative to the other balls tested. Basically, it measures the number of boards from the breakpoint to the pins.

Back end is observational and testing is done in a commercial center, not in a completely controlled environment. Therefore, there is a margin of error. Like with length, this error should not be great, but it does exist. Also, as with length, the bowler's style, level of ability, lane condition, ball surface, and other factors contribute to the actual back end that each bowler sees. These variables may cause balls to be different for different individuals.

Total hook

This is probably the least relevant part of our bowling ball ratings. Unless you are on either end of the power spectrum, this rarely contributes anything useful. Straighter players may prefer the extra movement of a bigger hooking ball since this will give them more area to play. Larger hook players may have more success with a ball that covers fewer boards, since this will let them reduce the number of boards crossed and reduce front end burnout. We now use a 1-100 rating scale for total hook.

SUMMARY

A summary of information for the reader who can't wait to get to the pro shop and buy this ball.

SUMMARY

Strengths: The versatility of the Cell is what stood out most in our testing. The Cell has the ability to provide a wide variety of ball reactions by adjusting the surface. This is true with many balls, but even more so with the Cell.

Weakness: As with any ball that likes oil, the Cell will have trouble on dry and short patterns. Polishing the cover will help on broken-down medium and long conditions, but there isn't much that can be done for the short patterns.

Overall: The Cell is best suited for medium to heavy oil patterns. Most balls on the market are targeted for either oily lanes or medium lanes, but this one is versatile enough to handle both.



Strengths

A general summary of which particular positive characteristics evidenced themselves during the tests.

Weakness

A general summary of which ball characteristics might give some bowlers problems. Some ball characteristics may only affect particular styles, strictly subjective of course. They would be noted here.

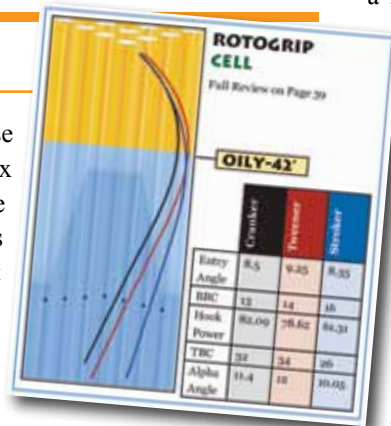
Overall

Again, a subjective synopsis of the testers general impressions after the ball testing is completed. A subjective synopsis of any differences between the bowlers would be stated in this section.

DIGITRAX

The main purpose for us using the Digitrax software is to show the difference in ball paths for our three different testers. By showing the different paths for a certain ball, the reader can visually see the effect different releases have on the ball.

As a bonus, Digitrax provides several different ratings. The most important are entry angle, back end, hook power, total boards covered and alpha angle. Although these ratings would vary depending upon the oil pattern in which the ball is graphed on, it wouldn't be fair to judge a ball thrown on an oily pattern versus a ball thrown on a medium pattern. It would be fair though to compare two balls tested on the medium pattern. Keep in mind that there are several factors that may skew the Digitrax numbers slightly which is the main reason that we use our own numbers for the reviews. The main factor is the testers themselves. As with any bowler, we may throw the ball incredibly well one day and the next we are having an average



day. Another factor is the oil pattern itself. Although we use a state of the art Kegel lane machine, the oil pattern is affected by several different factors such as the temperature and humidity of the bowling center.

DEFINITIONS

Entry angle: The angle the ball is traveling just prior to entering the pin deck. A positive number indicates traveling towards the pocket; a negative angle indicates movement away from the pocket.

BBC (Back end boards covered): This is the total boards covered or crossed from the breakpoint board to the entry board.

Hook power: This is the speed or how strong the ball's movement is traveling horizontally towards the pocket from the breakpoint. This is not the speed traveling down the lane, it is the speed or how strong at which the ball is traveling side to side. A higher number indicates a stronger movement to the pocket; a lower number indicates a smoother movement towards the pocket from the breakpoint.

TBC (Total boards covered): This is the total boards covered or crossed from the time the ball contacts the lane to the entry board at the pins.

Alpha angle: The combined angle movement of the ball. It is calculated using the launch and entry angles to give a total angle change or movement of the shot.

EDITORS NOTE: Now you know everything there is to know about our ball reviews. We try to give each and every ball a chance to shine, but if we cannot get a good reaction, then we feel duty-bound to report that to you. Conversely, if we get an outstanding reaction, then we are obligated to let you in on our enthusiasm. We try to keep the ball reviews light and fun as well as informative. It is important to remember however, that no matter how favorable or unfavorable the review goes, it is still a subjective opinion. Balls that we give an overall good review to may remind you of a boat anchor. Balls that we pan, may result in records and award scores for you. We can assure you that they are done as fairly, as consistently, as objectively and as honestly as is possible by human hands. 🎳