The pros said they needed a ball to help them meet the challenges of new lane conditions on the Tour. We gave them not one, but two great new balls.

They're called the PRO XS I and PRO XS II. We developed them specifically for professional bowlers because the new, high-viscosity lane dressings and additives on the PBA and LPBT Tours are causing more skid and tighter backends. AMF has addressed these challenges by developing two of the most sophisticated bowling balls ever made.

Although we set out to create a ball for pro use, we're certain the PRO XS I and PRO XS II can also help any skilled player who is confronted by these new, changing lane conditions.

Let me explain how the PRO XS I and PRO XS II came to be. As Pro Rep for AMF's Staff of Champions, I'm on the road constantly with our pros. It wasn't hard to see they needed a ball that could rev faster and hit harder on the Tours' new lane conditions. And knowing that lane conditions can vary greatly in how the oil is applied, we went a step further. We designed the PRO XS I for heavy oil and the PRO XS II for medium-to-light oil.

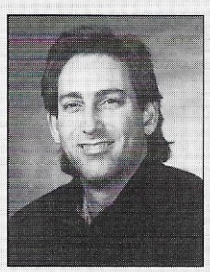
A complex 5-piece design gives the PRO XS I and II the hitting power pros demand.

To give these balls tremendous hitting power and a more consistent break point, we began with the core. Taking AMF's X-Technology™ to a new, advanced stage, we designed a 5-piece ball with a dynamic 3-piece core. In addition, as part of the weightblock, we developed a unique composite alloy called AMF Ceram-X™ that provides all the benefits of a super-dense material *and* can be easily drilled.

To optimize performance on different lane conditions, we gave each ball its own distinctive reactive urethane coverstock. For the PRO XS I we developed an "aggressive" coverstock to produce enormous hook on heavy oil. For the PRO XS II, we created a milder, less aggressive coverstock for longer skid on drier lane conditions.

That left one variable – the bowler's individual style. The key to fine-tuning these amazing new balls for different bowling styles is in the drilling. On the following pages, we'll show you how to match the PRO XS I and the PRO XS II to different bowling styles for optimum performance. We've used the bowling styles of the AMF Staff of Champions to create a chart that will guide you to the ball drillings that best suit your customers.

While pros depend on ball performance for a living, elite non-professionals also need it for that winning edge. Because these new balls are highly complex, they're not for everyone. But for skilled bowlers, they're going to be indispensable.



Yours truly,

Del Warren

Del Warren, Pro Tour Rep for the AMF Staff of Champions

The new PRO XS I and PRO XS II were developed for the challenging lane conditions faced by the pros today. Each ball represents a significant advancement in AMF's X-Technology™, featuring a complex 5-piece design with a dynamic 3-piece core. As part of the weightblock, AMF Ceram-X™ composite alloy provides all the performance benefits of a super-dense material, *and* it's drillable.

AMF

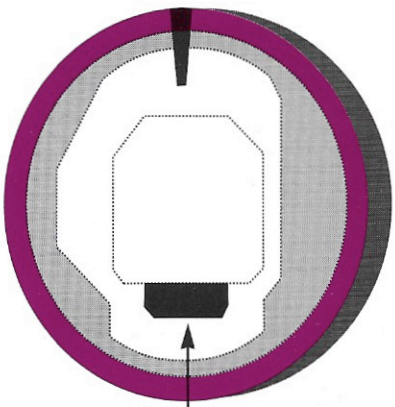
The PRO XS I & II. Core, Coverstock, Lane Condition, And Bowling Style Can Now Be Totally Synchronized.

In the PRO XS I and PRO XS II, AMF's X-Technology has two bowling balls that allow the combination of ball technology, lane condition and the bowler's style and skill to be fine-tuned for maximum control on different lane conditions. To appreciate the enormous potential and versatility of these balls, begin by becoming acquainted with PRO XS construction and the variations in hook ratings produced by using a different, highly specialized coverstock on each ball.

PRO XS I

Performance characteristics: Generates maximum revs and has large flare potential, creating enormous hook with a consistent break point for exceptional hitting power. Excellent performance on heavy oil.
Design: 5-piece construction (3-piece, asymmetrical core with 2-piece shell); AMF Ceram-X™ peripheral core block
Coverstock: PRO XS I specialized, super-hooking reactive coverstock
Weights: 12, 14, 15, and 16 pounds
Color: Black Cherry
Finish: AMF exclusive two-stage finish: 320-grit sanded, then fine-tuned by hand buffing. (Due to hand buffing, there may be cosmetic variations of balls.)

The PRO XS's 5-piece design advances the amazing performance characteristics of X-Technology. Both the PRO XS I and PRO XS II feature AMF Ceram-X as part of the 3-piece core, providing the hitting power of a super-dense material, plus the added advantage of easy drillability.



AMF Ceram-X™

PRO XS II

Performance characteristics: Generates maximum revs and has large flare potential. The PRO XS II has a longer skid than the PRO XS I for excellent performance on light to medium oil.
Design: 5-piece construction (3-piece, asymmetrical core with 2-piece shell); AMF Ceram-X™ peripheral core block
Coverstock: PRO XS II specialized reactive coverstock for longer skid and controllability
Weights: 12, 14, 15, and 16 pounds
Color: Pearlized Wild Cherry
Finish: Polished

DRILLING	FLARE RATING	HOOK RATING	
		PRO XS I	PRO XS II
Maximum Leverage	10	17	10
Moderate Leverage	8	16	9
Half-Leverage	7	13	8
Heavy Oil (Strong Backend)	6	11	7
High RG (Strong Backend)	6	10	6
High RG (Forward Roll)	5	8.5	5.5
Standard Label	4	7	5
Low RG (Forward Roll)	3	7	5
High RG (Stable Pin Motion)	2	6	4
Low RG (Stable Pin Motion)	2	5	3

PRO XS Hook And Flare Ratings

With the growing use of pin-out and high flare potential balls to produce greater hook (a trend begun by AMF with the Sumo in 1991), standard hookability ratings of 1 to 14 or 15 have become inadequate. To reflect the true hook potential of the PRO XS series, hook ratings on this chart are on a 1 to 20 scale. A flare rating of 10 designates the highest amount of usable flare available today.

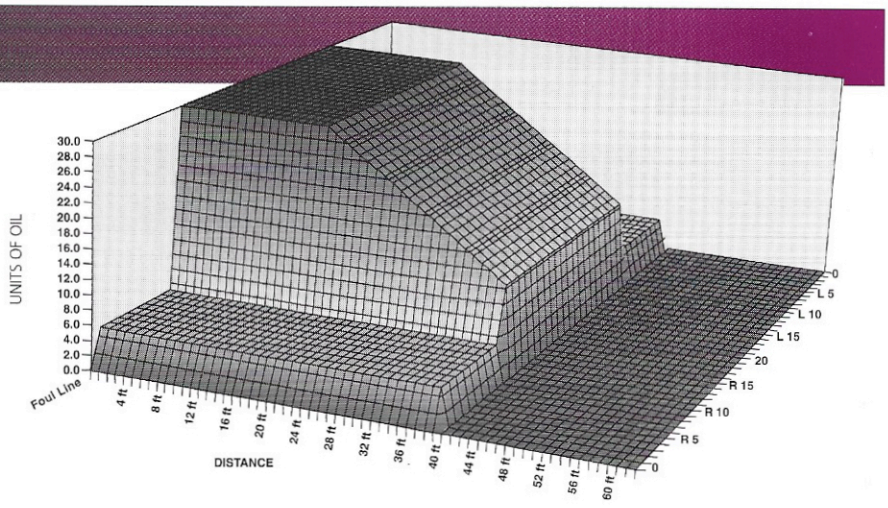
Our Experience On The Pro Tour Proved The Need For A Ball (Or Two) Designed For Today's Lane Conditions.

Today's demanding lane conditions are created by a combination of where the oil is applied and the quantity of oil applied. Depending on oil quantity, a pattern can be described as light, medium, or heavy. Distribution and thickness of the dressing are then affected by play. The 3-dimensional representations below demonstrate the three basic lane conditions encountered by pro bowlers on the PBA and LPBT Tours and by amateurs on typical bowling center lanes.

Wet-Dry

Heavy concentration of oil in the front center of the lane, drastically decreasing to a light film of oil on the outside of the lane with dry backends. There is a defined line between the heavy and light oil levels.

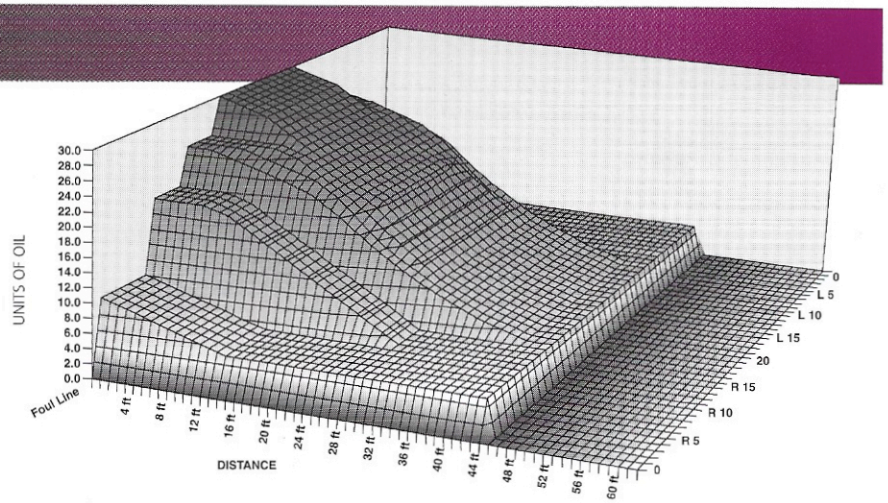
This condition is characterized by overskid when the bowler plays the center of the lane and early over-hook when the bowler plays the outside of the lane.



Blend

Heavy concentration of oil in the front center of the lane, gradually tapering down to a light film of oil on the outside of the lane. The heavy concentration of oil in the front center of the lane also tapers lengthwise to a medium film of oil at the end of the oil pattern.

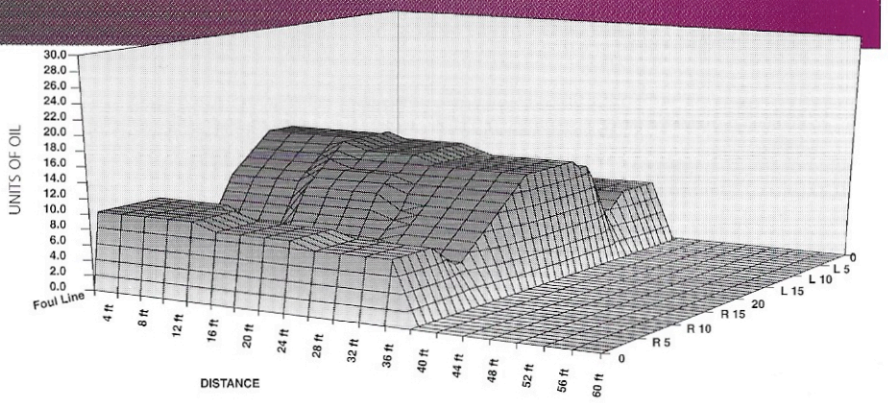
This condition results in a lane on which the amount of hook increases gradually as the player moves toward the outside of the lane.



Track Shot

Slightly more oil in the center of the lane than on the outside of the lane with a higher friction area called the "ball track" between the 7th and 15th boards caused by play.

This condition is characterized by early hook in the ball track with less hook in the center of the lane. The area outside the ball track hooks significantly less than the ball track and is often called an "out of bounds."



The Bowling Styles Of Our Staff Of Champions Provided A Key Part Of The Formula For The PRO XS.

Most bowlers use one of several basic bowling styles—styles represented among the professional bowlers on the AMF Staff of Champions. Bowling style serves as an important guide in the selection of equipment and determination of the proper drilling. Knowing a bowler's style, the PRO XS I and PRO XS II can then be fine-tuned for that bowler.

Marianne DiRupo

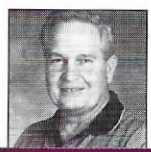
An athletic, hard-throwing "stroker". Axis point: over 5¼" and up 1".
Revolutions: 12 to 14. Speed: very hard.

Marianne is one of the best athletes in the LPBT. Because she likes to throw the ball hard, Marianne prefers dry lanes. On heavily oiled lanes, her extremely high speed demands a ball that will get into a roll quickly and still have some backend reaction.

Joe Firpo

A smooth, modern-day "stroker." Axis point: over 4⅞" and up ¼ inch.
Revolutions: 13 to 15. Speed: slow to hard depending on conditions.

Joe is very versatile and can change speeds and hand positions to match the lane conditions. He prefers to use drillings that are controllable because they give him a better overall picture of the lane condition.



John Hricsina

The "power player" on the Senior Tour. Axis point: over 4¼" and up ¾".
Revolutions: 14 to 16. Speed: slow to medium.

John has one of the most powerful balls on the PBA Senior Tour. He has problems with wet-dry lane conditions and lanes that hook early. To combat this, we tend to keep the pins on all of John's drillings 4" to 6" from his PAP.

Dennis Jacques

A "power player" with high back swing and cupped wrist. Axis point: over 5" and up ⅜".
Revolutions: 16 to 19. Speed: medium to hard.

Dennis is one of the Tour's most powerful players, but he likes to keep the ball on line with good ball speed. He tends to use drillings that reduce backend reaction.

Bob Learn, Jr.

A contemporary "power player." Axis point: over 5¼" and up ⅜".
Revolutions: 15 to 18. Speed: slow to medium.

Bob combines shot making and a powerful release for one of the best strike balls in the business. Bob's main concern are those extremely wet-dry conditions where control is at a premium.

John Mazza

A smooth, flowing, left-handed "stroker." Axis point: over 6¼".
Revolutions: 13 to 15. Speed: slow to medium.

John, with his great rhythm, is a left-hander who can play any angle on the lane. But unlike most left-handers, he prefers to play inside. Because of this, John likes to use drillings that delay the roll of the ball.

Leila Wagner

Textbook style with "spinner" release. Axis point: over 3⅝" and up ¾".
Speed: medium.

Leila likes the lanes with less oil due to her good speed and large axis tilt. Like most spinners, her challenge is on oily lanes. To help her, we use drillings that rev up earlier and turn the ball forward sooner. Also, her best carry comes when she can keep the ball on line.

Dick Weber

A classic "straight player." Axis point: over 5⅝" and up 1".
Revolutions: 10 to 12. Speed: medium.

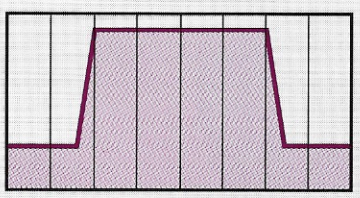
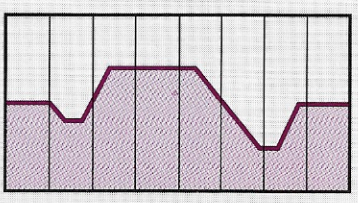
Dick's style has allowed him to win titles in five consecutive decades. He is always around the pocket, but needs help from the ball to carry the corner pins. To help Dick increase his entry angle, we use drillings producing at least 2½" of flare.

Score = Skill + Bowler's Style + Lane Conditions + Ball. With Our PRO XS Balls, The Equation Is Finally Balanced.

This chart is where it all comes together. The X-Technology design and coverstock formulas of the PRO XS I and PRO XS II. Lane conditions. Bowling style. In the hands of skilled bowlers, a PRO XS drilled according to this chart provides the most advanced technological tool ever available for achieving control and hitting power on any lane condition.

In using this chart, remember that the lane conditions described are a combination of where the oil is placed and quantity of oil applied. For example, a blend pattern may range from light to medium to heavy oil. For heavy oil, bowlers should use the PRO XS I; for light-to-medium oil, the PRO XS II is the best choice. Adjust surface texture for exact break point desired.

Lane Conditions

BOWLING STYLE	Blend 	Wet-Dry 	Track Shot 
Spinner Leila Wagner	Half-Leverage	Low RG/ Forward Roll	High RG/ Forward Roll
Straight Dick Weber	Maximum Leverage	Standard Label	High RG/ Strong Backend
Stroker John Mazza Joe Firpo Marianne DiRupo	Moderate Leverage	High RG/ Stable Pin Motion	Standard Label
Power Player Dennis Jacques Bob Learn, Jr. John Hricsina	Heavy Oil/ Strong Backend High RG/ Strong Backend	Low RG/ Stable Pin Motion	High RG/ Stable Pin Motion

Drilling The PRO XS I And PRO XS II.

General Guidelines:

1. When determining the PAP for the PRO XS, subtract ¾" from bowler's horizontal axis coordinate when axis point is measured on a ball with 1" or less of flare. If the axis point is measured on a ball with 1" to 3" of flare, subtract ⅜" from bowler's horizontal axis coordinate to determine the correct axis coordinates for the PRO XS. If the axis point is measured on a ball with more than 3" of flare, use that axis point for the PAP.
2. With all drillings, keep the pin 1½" on the grip side of the midplane and above a line drawn from the bowler's PAP through his ring finger hole to prevent the ball from rolling over the gripping holes.
3. Balance holes should be placed on the midplane for balls with a flare rating of 8 or more and should not exceed 1" beyond midplane for balls with a flare rating of 5, 6 or 7. For balls with a flare rating of 4 or less, 2" beyond midplane is acceptable.
4. On those drillings where CG does not fall on the midline, draw a line from Center of Grip through CG until line intersects midplane. Place balance hole at line's intersection with midplane or beyond as required by the drilling.
5. To gain control of the breakpoint, reduce side weight toward a limit of ¾ ounce negative side weight by use of a balance hole.
6. When playing inside angles, keeping CG closer to or equal to the pin distance from PAP greatly increases hook angle, carry and flare.

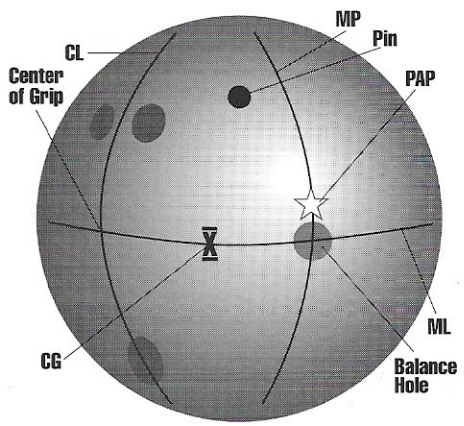
To create a PRO XS Full-Roller drilling, follow Full-Roller instructions provided with the original AMF XS bowling ball.

Key to drilling diagrams:

- ● = Pin (top of weightblock)
- X = Center of Gravity (CG)
- ☆ = Positive Axis Point (PAP)
- ● = Balance Hole
- **CL** = Centerline of Grip
- **MP** = Midplane
- **ML** = Midline

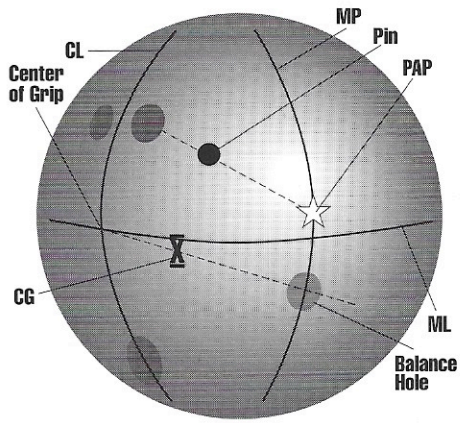
In these drillings, **HIGH RG** refers to a drilling creating a higher moment of inertia that produces a longer skid and a later breakpoint. **LOW RG** refers to a drilling creating a moment of inertia that produces earlier roll and more revs.

Pin In = 0-2" from CG; Pin Medium = 2-4" from CG; Pin Out = 4-5½" from CG



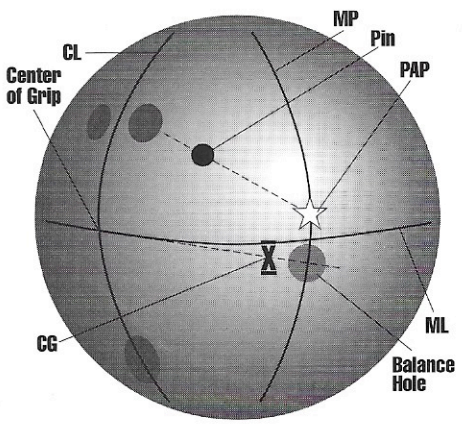
Maximum Leverage

Place pin 3⅜" from PAP and 1½" on grip side of midplane. Place CG 3" from PAP. Place balance hole on midplane. *Use Pin Medium or Pin Out*



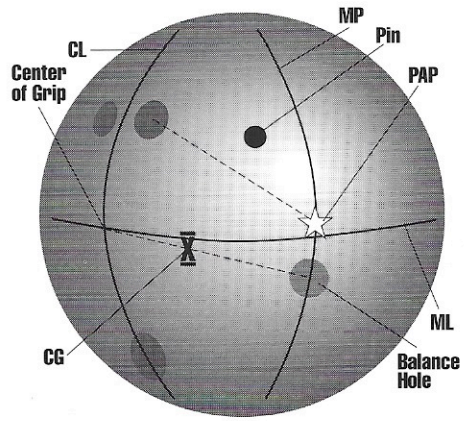
Moderate Leverage

Place pin 3⅜" from PAP and 2¼" on grip side of midplane. Place CG 3¾" from PAP. Place balance hole on midplane. *Use Pin In or Pin Medium.*



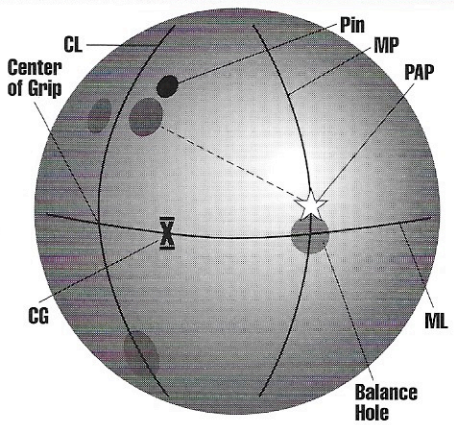
Half-Leverage

Place pin 3⅜" from PAP and 2¼" on grip side of midplane. Place CG 1¼" from PAP. Place balance hole on midplane. *Use Pin Medium with top weight of 3.3 or less.*



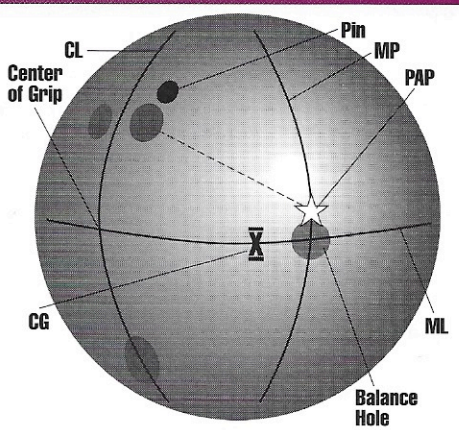
Heavy Oil/Strong Backend

Place pin 2½" from PAP and 1½" from midplane. Place CG 3½" from PAP. *Use Pin Medium.*



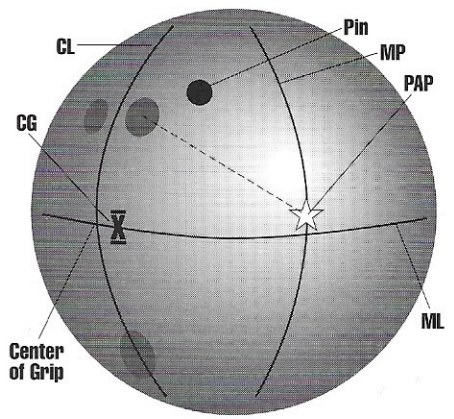
High RG/Strong Backend

Place pin 5" from PAP, keeping pin above finger holes. Place CG 4½" from PAP. *Use Pin Medium or Pin Out.*



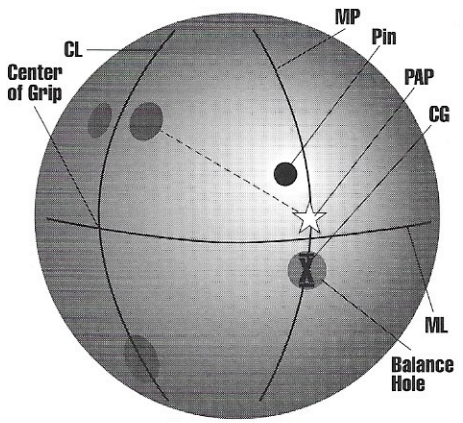
High RG/Forward Roll

Place pin 5" from PAP, keeping pin above finger holes. Place CG 1" from the PAP. *Use Pin Out with top weight of 3.3 or less.*



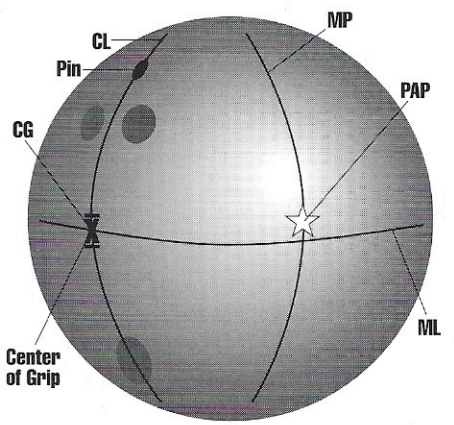
Standard Label

Place pin 4½" from PAP. Place CG approximately 0 to ½" to the positive side of the centerline. *Use Pin Medium.*



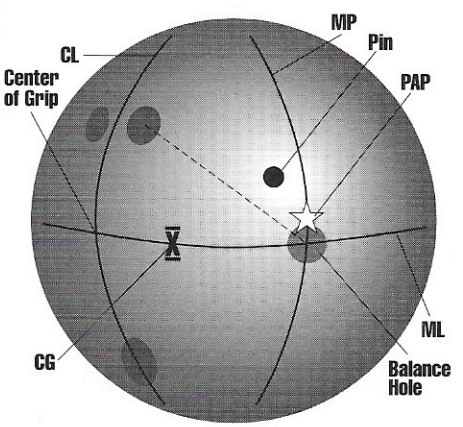
Low RG/Forward Roll

Place pin 1½" from PAP and 1" on grip side of midplane. Place CG on midplane. Place balance hole at CG. *Use Pin In (1½" to 2") or Pin Medium with top weight of 3.3 or less.*



High RG/Stable Pin Motion

Place pin 5½" from PAP, keeping pin above finger holes. Place CG on intersection of midline and centerline. If more reaction is desired, place CG approximately ¾" on positive side of centerline. *Use Pin Medium or Pin Out.*



Low RG/Stable Pin Motion

Place pin 1" from PAP. Place CG approximately 3" to 5" from PAP. *Use Pin Medium. For high-track players only, use Pin Out.*

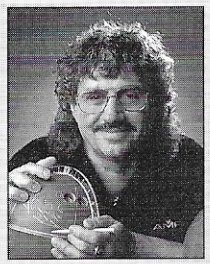
X-Technology™ No end in sight.

Science often presents us with many roads to follow at the outset of our search for solutions. Some prove to be deadends. Some go in circles. But X-Technology, the road we have taken at AMF in our high-technology ball development program, appears to have no end.

The center of X-Technology continues to be core design—beginning with the asymmetrical core advances that appeared in our first X-Technology ball, the XS. Strong core designs—the strongest in our estimation—are clearly key to the increased spin rates, phenomenal entry angles and astounding pin carry we are seeing in the performance of our X-Technology balls. New developments like our high-density, but easily drillable AMF Ceram-X™ core material are part of those designs.

To define this technology only in terms of core, however, would be misleading. The XS broke new ground in its four-piece construction—with not only dual-core construction but a dual shell, as well. Dual-shell design, this time combined with a three-piece core, appears again in the PRO XS I and PRO XS II. At the same time, one cannot overlook the role of new coverstocks in the performance of these balls. The effect of these coverstocks in the performance of the PRO XS balls on today's changing lane conditions is an X-Technology advance in its own right.

Where will X-Technology take us next? We see a long road ahead in the development of new core materials, new core configurations, new coverstock formulations—and in how we create new interactions between all of those components. We fully expect it to be a long and thrilling ride for everyone involved in bowling.



–Mo Pinel
AMF Ball Designer

AMF

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