
Supporting narrated video (NV) demonstrations, high-speed video (HSV) clips, technical proofs (TP), and all of my past articles are available online at billiards.colostate.edu. Reference numbers used in the articles help you locate the resources on the website.

This is the first article in a series dealing with the “System for Aiming With Sidespin” (SAWS), a full-length instructional video I just released on DVD and for stream or download. SAWS covers a new system to compensate your aim for cue ball (CB) deflection and object ball (OB) throw when using sidespin. It is based on using combinations of Back Hand English (BHE) and Front-Hand English (FHE), and it can be applied to any cue, bridge length, and shooting style. A detailed table of contents of SAWS along with a video overview can be found at DrDaveBilliards.com/saws. This month, I will cover the basics of CB deflection.

Diagram 1 shows the effects that come into play when using sidespin. You must learn how to compensate for these effects if you want to use sidespin effectively in your game. First, when you hit the CB off center, it does not go straight. It squirts off line; in this case, to the left with right spin. As we look at below, different cues create different amounts of squirt. The CB also curves back some, depending on shot speed and cue elevation. This is called swerve. The combined effects of squirt and swerve is often called CB deflection (AKA squerve, which is the combination of SQUIrt and swERVE), referring to the amount the CB is off from the aiming line at a given distance.

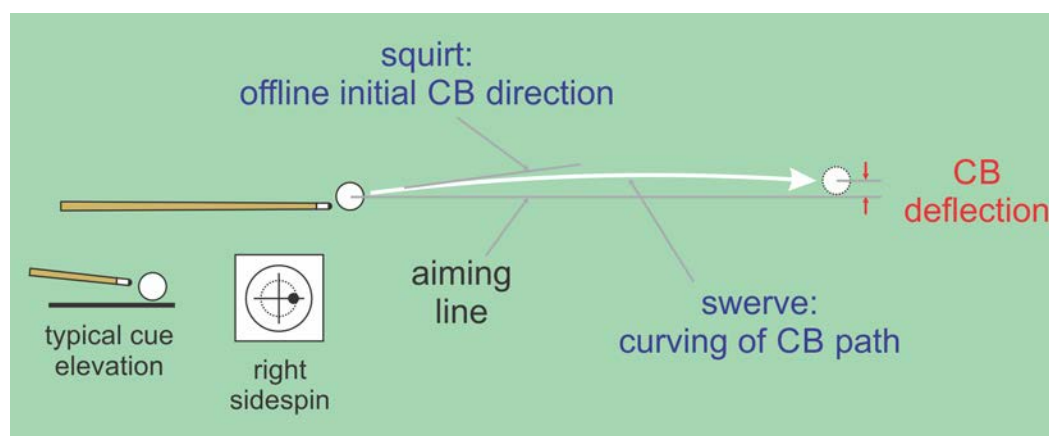


Diagram 1 CB deflection

A good way to experience and learn the effects of CB deflection is to set up a straight shot like shown in **Diagram 2**, aiming at a target ball on the end cushion. Hitting the shot at different speeds and from different distances will give you a feel for the important effects. This is also a good way to compare cues or get accustomed to a new cue that might have a different amount of CB deflection than what you are used to. For each shot, you should use what is called Parallel English (PE), where you first aim the center of the CB at the target, and then shift the cue sideways keeping the cue parallel to the original line of aim. **Diagram 3** illustrates how PE works, and it is demonstrated in online video [NV J.9](#).

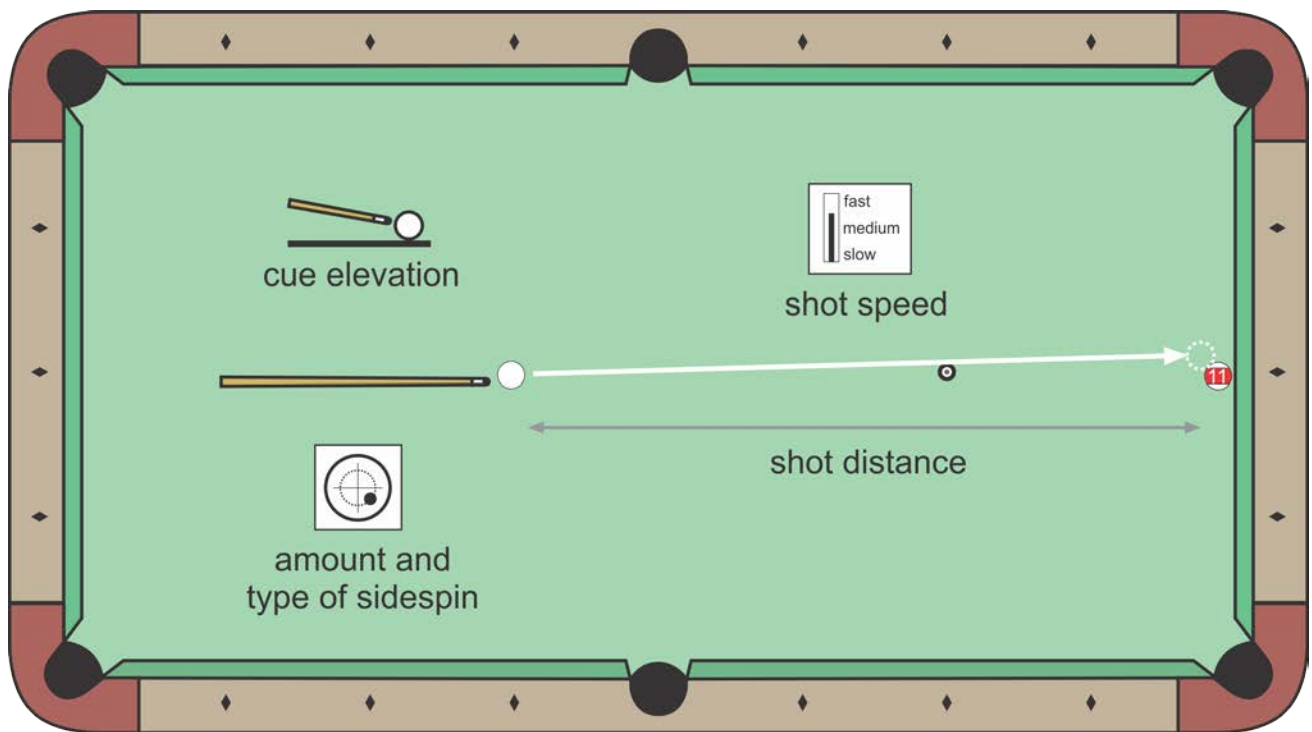


Diagram 2 CB deflection drill

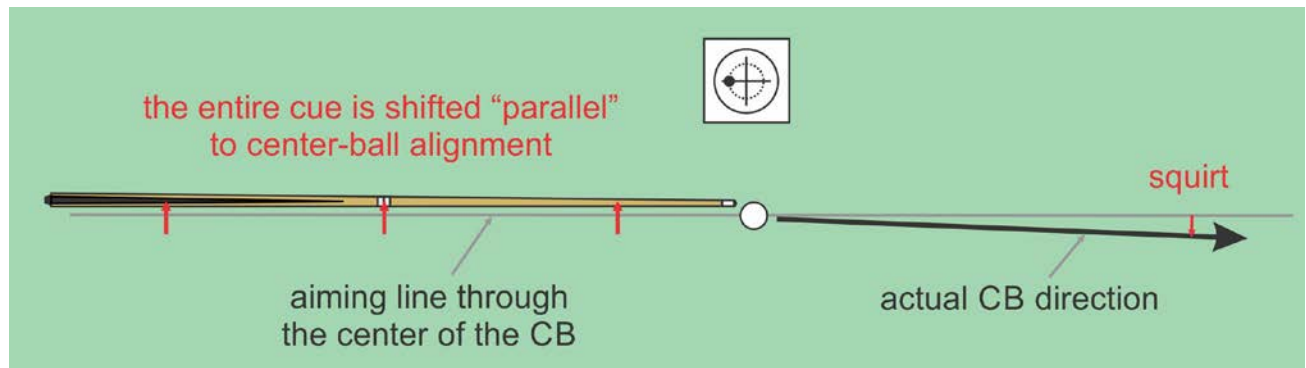


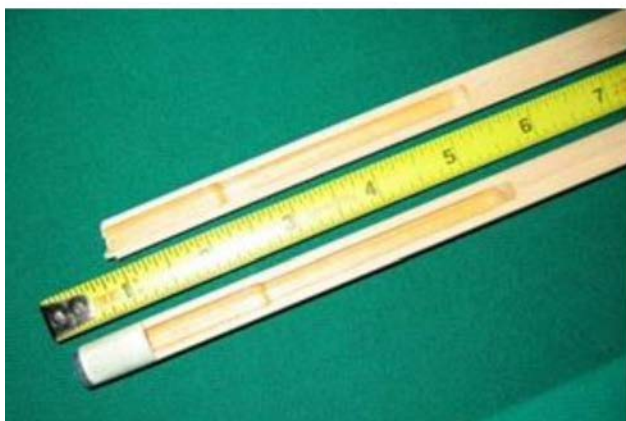
Diagram 3 Parallel English (PE)

I recommend using close to maximum sidespin with each shot in **Diagram 2** so you can be as consistent as possible with the amount of spin, and so you can see the full effects. If there were no CB deflection, the CB would hit the OB squarely, but it doesn't. As demonstrated on SAWS, first use fast speed, with both left and right spin. Notice the squirt to the right with left spin and the squirt to the left with right spin. With most cues, you will miss the OB on the cushion entirely, even though you are aiming straight at the center of the ball. Obviously, if you do not account for this effect when using sidespin, especially with a fast-speed shots, you will not be very effective.

Then try a shorter shot distance. Again, with fast speed and a large amount of sidespin, you will still miss the target. However, at shorter distance, there is less net CB deflection. At slower speed, there is also less net CB deflection. Cue elevation, where the back of the cue is higher than the front with the cue angled above level, also affects CB deflection. Try different cue elevations to see the effects. With more cue elevation, the CB swerves back more resulting in less net CB deflection. At large cue elevations, swerve is actually larger than squirt, and net CB deflection is actually in the same direction as the spin. So with left spin, the CB will go to the left of target; and with right spin, the CB will go to the right of target. But again, this occurs only when the cue is elevated. With just the right amount of cue elevation for a given cue, shot,

distance, and shot speed, swerve will exactly cancel squirt resulting in no net CB deflection with the CB hitting the target OB squarely.

As I mentioned above, the amount of squirt and net CB deflection can be different with every cue, as demonstrate with several cues in online video [NV J.9](#) and in the SAWS video. Shafts that produce a lower-than-average amount of squirt and net CB deflection are called low-deflection or LD shafts. The characteristic that makes a shaft LD is small "endmass," which is the effective mass of the end of the shaft closest to the tip. Squirt can be lowered by reducing the weight of the last 5-8 inches of the shaft. This can be done by reducing the shaft's diameter, drilling out the core of the end of the shaft, using a lighter and/or harder tip, and/or using a lighter or no ferrule. **Diagram 4** shows the internal construction of two LD Predator shafts showing how the endmass is reduced. The end of the 314 is drilled out, and the carbon-fiber Revo is hollow, filled with a low-density foam. For more information about endmass and LD shafts, see the [LD shaft](#) FAQ page at billiards.colostate.edu.



a.) Predator 314 Shaft



b.) Predator Revo Shaft

Diagram 4 LD shaft construction

Based on everything you will learn from the **Diagram 2** drill, CB deflection varies in a complicated way with shot speed and distance, cue elevation, cloth conditions, and with the type of cue being used. If you want to learn more about all important squirt, swerve, and CB deflection (squerve) effects, see the [squirt/swerve/throw effects](#) FAQ page at billiards.colostate.edu. It describes and demonstrates everything in detail. And if you want to learn how to compensate your aim for these effects, stay tuned to future columns and check out SAWS.

I hope you enjoy and benefit from my series of articles dealing with the "System for Aiming With Sidespin" (SAWS). If you want to learn more, visit DrDaveBilliards.com/saws. Also check out online video [NV J.9](#) that shows examples of the SAWS system being applied to a wide range of interesting game-situation examples.

Good luck with your game,
Dr. Dave



[NV J.9](#) – "Got English?" – How to Aim Using Sidespin, With Game-Situation Examples

PS:

- I know other authors and I tend to use lots of terminology, and I know not all readers are totally familiar with these terms. If you ever come across a word or phrase you do not fully understand, please refer to the [online glossary](#) at billiards.colostate.edu.

Dr. Dave is a PBIA Advanced Instructor, Dean of the Billiard University, and author of the book: [The Illustrated Principles of Pool and Billiards](#) and numerous instructional DVD series, all available at: DrDaveBilliards.com.