

Reading Break: Zero in on the Zero Break Line

by Geoff Mangum

Geoff Mangum's PuttingZone™ Instruction

<http://www.puttingzone.com>

geoff@puttingzone.com

[ZipTip: GREEN & PUTT READING: Reading Break: Zero in on the Zero Break Line](#)

If the green surface for the putt is basically flat although tilted, you can find one aim spot for any putt of the same length by identifying the fallline through the hole (the "zero break line" or ZBL) where all putts up or down are perfectly straight, walk around the hole in a semicircle from your ball to a sideon putt to the hole of the same length that is perpendicular to the ZBL (and hence has no elevation change up or down from there to the hole), and visualize this putt at regul regular speed to imagine how far below the hole such a putt would roll low and cross the ZBL; the aim spot for all putts of the same length is that far above the hole along the ZBL.

A pro trick for calculating break is to identify the line that runs straight uphill through the hole, and from the ball, aim at a point on this line about two feet above the hole. This is a crude version of the Zero Break Line (ZBL) method articulated by H.A. Templeton in his marvelous book, *Vector Putting: The Art and Science of Reading Greens and Computing Break* (1984).

The short version of the ZBL method is: Whenever your putt runs across sloped but basically a flat zone of the green, the aim point for any breaking putt is above the hole on a line through the hole that is straight uphill and downhill. There is one aim spot for all putts of the same length, regardless of the starting position of the ball across the flat slope. The distance of this aim point above the hole is found by imagining the path of a putt of the same length and speed made from pin high directly at the hole to visualize how far downhill the ball will curve. The aim spot is this same distance ABOVE the hole, for any putt of this same length and speed. Sounds tricky, but it's really simple and applies to perhaps over half of all putts.

The Science.

The actual "break" of any putt across a tilted but basically flat zone of a green can be known from the position of the ball on the green (in relation to the hole and ZBL), the putt speed, the green speed, and the slope. This allows the golfer to spot the aim point for the putt, as a point along the ZBL above the hole. For purposes of simplification, all putt speeds are such that the ball would stop about one foot past the hole if it missed. This isolates green speed and slope.

On a green with average slope (about 3%, or 3 feet rise in elevation for every 100 feet of run uphill, or 3.3 inches for every 10 feet of run), with a medium fast playing condition (Stimpmeter 7'6"), the aim spot is on the ZBL above the hole the same number of inches as the number of feet in the putt.

As the green speed decreases, the aim spot drops one inch for each foot less in Stimpmeter speed. As the green speed increases, the aim spot rises one inch plus another 20% of the ZBL distance for every one foot added to Stimpmeter speed.

As the slope decreases or increases, the aim spot moves up or down proportionately to the slope change over the 3% norm (i.e., 1% slope has an aim spot one-third lower; 6% slope has an aim spot twice as high as the 3% slope aim spot).

So there is one general rule for an average slope (3%) and a medium fast playing surface (7'6"). There are two modifications of the aim-spot distance up the ZBL depending upon different slope or green speed.

How It's Used.

Assume the oval green is 100 feet long and 80 feet wide, sloped but flat, with the pin in the center, and your ball resting in the front / lower left quadrant 15 feet from the hole.

Find the ZBL. Note the length of your putt, and then identify the ZBL by examining and judging the slope through the hole. It helps to know that the rim of the hole in a tilted surface presents a tilted circle that has one and only one highest point on its perimeter, so look for the matching highest and lowest points on the lip. The ZBL runs through these two points and the center of the cup.

Get the Aim Spot by Imagining the Same Putt from Pin High. Then walk radially uphill to the pin-high position the same distance 15 feet from the cup, on a line to the hole that is perpendicular to the ZBL. Imagine putting straight at the hole with your usual speed and tempo so that if you miss the ball stops past the hole your usual distance, say one foot.

Instead of assessing green slope and speed explicitly and following the somewhat complicated math, just envision how far below the hole the side-on putt will break. The point where this imaginary putt intersects the ZBL on the low side defines the effect of gravity. Gravity accounts for each of these inches, so to account for gravity, you aim the putt the same number of inches higher ABOVE the hole on the ZBL. This sets the aim spot for all putts of the same length.

(For a green with a 3% slope and a Medium Fast playing speed, this imaginary side-on putt should intersect the ZBL about 15 inches below the hole; the number will be different for different length putts, putt speeds, green speeds and slopes, but all you need to worry about is an accurate imagination of whatever putt length and speed, and green speed and slope, you are facing.)

Adjust a Little for Uphill (less) /Downhill (more) Break. At this time, the only adjustment necessary for the position of the aim spot is to make a slight allowance for speed difference due to putting either uphill or downhill. Since the uphill putt needs extra speed, there is less break, so the aim spot is lower. In general, on an average slope (3%) with medium fast playing conditions, subtract about one inch from the aim spot for each 10 feet of uphill putt and a bit less as the putt is still uphill some but more sideways than up. For downhill putts, the same rule applies in reverse: add one inch for each 10 feet of putt downhill, and a bit less for putts running athwart the slope downward more sideways than down.

These add/subtract numbers increase for each foot of putt as the slope steepens, and decrease as the slope flattens. For a 6% slope, you would be adding two or fewer inches for each 10 feet of putt downhill.

As you first try out the ZBL method, you may want to skip this uphill/downhill adjustment until you get a feel for the aim spot from different directions.

Use the Same Method for Straight Putts Uphill or Downhill. When the putt is straight uphill, the aim spot will be set the same way. This means you will target a spot further uphill than the hole, which is necessary to overcome the gravity effects going uphill with the appropriate addition of force. On a 3%, Medium Fast green, a 15 foot putt calls for an aim spot 15 inches above the hole. The opposite applies for downhill putts. The aim spot is still above the hole, so the aim spot appears short of the hole going straight down. On a 15 foot putt on this same green, the aim spot would be 15 inches short / above the hole. The side-on imaginary putt integrates putt speed, green speed, and slope in the same manner to give you an aim spot under different conditions, even for these straight putts.

Make This Part of Your Game.

Obviously, not many greens are totally flat albeit tilted. Still, with top dressing, mowing, weathering, drainage design features, and dictates of fairness in hole placement, putts quite often run over pretty uniformly sloped sections of the green. The ZBL technique lets you get a pretty good handle on the situation.

There is really **only one rule and two modifications** away from the average slope and green speed. To simplify this to an intuitive, integrated version without the numbers and the math, walk from your ball to a corresponding distance hole high and imagine how the putt from hole high would break below the hole. This gives you the aim spot above the hole. You should be in the ballpark, with minor allowances for slower speed downhill (higher aim spot) or faster speed uphill (lower aim spot). Aim your putt's start line at this aim spot on the ZBL and make a sure stroke.

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