















PITCH DESIGN CHART - MLB AVERAGES

| PITCH TYPE (RHP) | 3D SPIN | SPIN RATE (RPM) | SPIN DIRECTION | GYRO (DEGREES) | SPIN EFFICIENCY | VERTICAL BREAK | HORIZONTAL BREAK |
|-----------------------|---|-----------------|----------------|----------------|-----------------|----------------|------------------|
| FB |  | 2250 - 2350 | 12:30 - 1:30 | <10° | >95% | 20" | 12" |
| 2S FB |  | 2150 - 2200 | 1:00 - 2:00 | 10° - 20° | 90% | 13" | 18" |
| SINKER |  | 2100 - 2150 | 1:00 - 2:00 | 20° - 30° | 85% | 10" | 18" |
| CUTTER |  | 2350 - 2450 | 11:00 - 12:00 | 40° - 50° | 45% | 8" | -2" : +2" |
| GYRO SLIDER |  | 2400 - 2500 | 11:00 - 12:00 | >85° | <10% | -1" | -1" |
| TOPSPIN SLIDER |  | 2400 - 2500 | 11:00 - 12:00 | 65° - 75° | 35% | -5" | -2" |
| SIDESPIN SLIDER |  | 2400 - 2500 | 10:00 - 11:00 | 65° - 74° | 35% | -2" | -8" |
| CURVEBALL 12-6 |  | 2500 - 2600 | 6:00 - 7:00 | 20° - 30° | 78% | 16" | -10" |
| SLURVE |  | 2500 - 2600 | 7:00 - 8:00 | 30° - 40° | 60% | 13" | -12" |
| CURVEBALL SWEEPING |  | 2500 - 2600 | 8:00 - 9:00 | 30° - 40° | 68% | 10" | -16" |
| CIRCLE CHANGEUP |  | 1700 - 1800 | 12:00 - 3:00 | 40° - 50° | 65% | 10" | 15" |
| THREE FINGER CHANGEUP |  | 1700 - 1800 | 12:30 - 1:30 | <15° | 90% | 15" | 10" |
| FRISBEE CHANGEUP |  | 1700 - 1800 | 2:30 - 3:30 | 10° - 20° | 85% | 0" | 20" |
| SPLITTER |  | 1400 - 1500 | 12:00 - 12:30 | <10° | 90% | 10" | 2" |

Rapsodo®

PITCHING



MLB DATA GUIDE

HOW TO SET UP YOUR RAPSODO MONITOR



SET THE RAPSODO UNIT 15.5 FEET FROM THE FRONT OF HOME PLATE



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measure to master.

1 VELOCITY AVERAGES (MPH)

| MLB | RHP | LHP |
|-----|------|------|
| FB | 93.5 | 92.2 |
| 2S | 93 | 90.8 |
| CT | 89.3 | 87.4 |
| CB | 79 | 76.7 |
| SL | 84.8 | 83.1 |
| CH | 84.7 | 83.3 |
| SP | 85.3 | 83.9 |
| KN | 75.9 | N/A |

4 SPIN RATE (RPM)

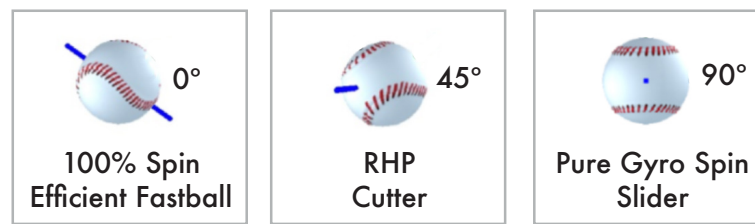
| TOTAL SPIN | | |
|------------|------|------|
| MLB | RHP | LHP |
| FB | 2275 | 2230 |
| 2S | 2164 | 2123 |
| CT | 2393 | 2248 |
| CB | 2516 | 2443 |
| SL | 2416 | 2344 |
| CH | 1749 | 1819 |
| SP | 1431 | 1363 |
| KN | 1441 | N/A |

Total RPM from Side, Top/Back, and Gyro Spin
 High RPM = Plays up in the zone ("Life" to the pitch)
 Low RPM = Natural sink ("Heavy ball")

| SPIN EFFICIENCY (TRUE SPIN/TOTAL SPIN) | |
|--|--------------------------------|
| MLB | SPIN EFFICIENCY RANGE |
| FB | 85-100% |
| 2S | 75-100% |
| CT | 45-65% |
| CB | 65-100% |
| SL | 0-30% |
| CH | 40-100% (varies based on type) |

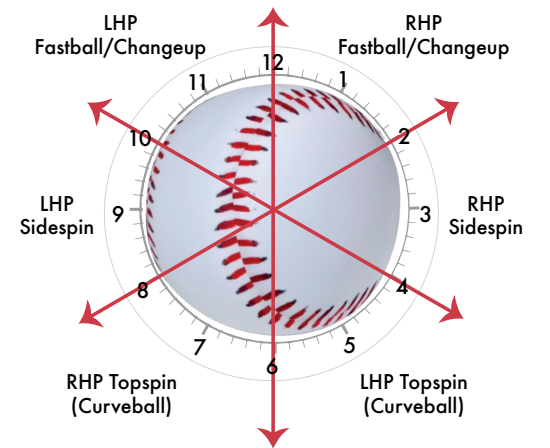
TRUE SPIN
 RPM's that contribute to spin related movement
 Top/back = vertical movement
 Side spin = horizontal movement
 Gyro/rifle spin = no spin related movement

2 GYRO DEGREE



3 SPIN DIRECTION

Spin direction averages vary by player

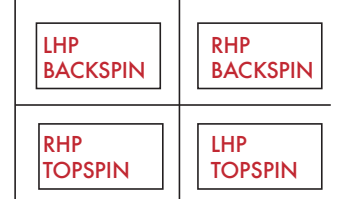


7 VERTICAL AND HORIZONTAL BREAK

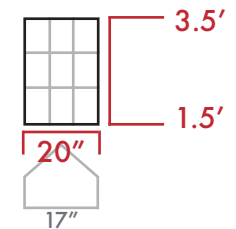
Vertical Break - Created from back/top spin RPMs. Higher spin efficiency results in higher Vertical Break

Horizontal Break - Created from side spin RPMs. Horizontal break is maximized at spin directions 3:00 and 9:00

Break Chart - Shown from pitcher point of view. Spin induced break is shown in inches.



8 STRIKE ZONE



9 3D BALL FLIGHT

Dashed line shows ball path with no spin related movement
 Solid line is actual ball path

Break Markers - Show the 1st inch of spin related break and the 2nd inch of substantial movement.

5 RELEASE HEIGHT AND RELEASE SIDE



Release Side represents the distance from the center of rubber at release from the pitchers point of view

Release Height - Vertical height above the ground when pitch is released

6 RELEASE ANGLE AND HORIZONTAL ANGLE

Release Angle = Vertical degree when the ball leaves the hand
 Horizontal Angle = Directional degree when the ball leaves the hand (left is negative and right is positive) This is true no matter LHP vs RPH.

Ranges will vary depending upon strikezone position. Typical ranges are 0:-2 for fastballs and 1-3 for breaking balls.

Example: +3 CB for a strike vs -1 CB for spiked pitch