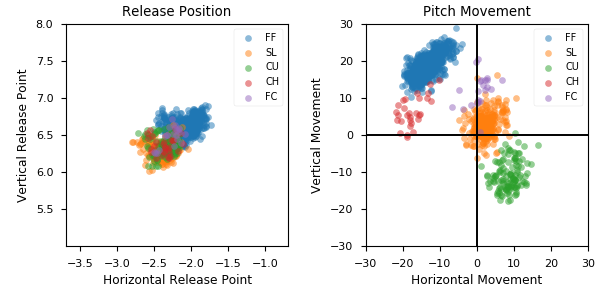
**Arsenal Report for Justin Verlander**  
2017-9-1 to 2017-11-1



**Aresenal**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pitch Type | % Thrown | Velocity (mph) | Spin Rate (rpm) | Horizontal Break (in) | Vertical Break (in) | xwOBA | wOBA | SwStr% |
| FF | 61.1 | 95.6 | 2593.0 | -13.6 | 18.6 | 0.34 | 0.231 | 11.5 |
| SL | 22.6 | 86.9 | 2661.0 | 2.3 | 3.0 | 0.328 | 0.229 | 21.8 |
| CU | 11.4 | 80.4 | 2858.0 | 8.6 | -10.8 | 0.266 | 0.172 | 9.1 |
| CH | 2.7 | 87.4 | 1821.0 | -17.5 | 6.3 | 0.4 | 0.333 | 17.2 |
| FC | 2.1 | 91.2 | 2556.0 | 0.6 | 12.0 | 0.171 | 0.078 | 4.5 |

* Pitch Type - FF: Four-Seam Fastball, FT: Two-Seam Fastball, SI: Sinkker, FC: Cutter, FS: Splitter, SL: Slider, CU: Curveball, KC: Knuckle-curve, CH: Changeup, FO: Forkball, SC: Screwball, KN: Knuckleball, EP: Eephus
* Velocity - recorded in miles per hour at release.
* Spin Rate - recorded in revolutions per minute at release.
* Horizontal Break - horizontal movement, in inches, of the pitch between the release point and home plate, as compared to a theoretical pitch thrown at the same speed with no spin-induced movement.
* Vertical Break - vertical movement, in inches, of the pitch between the release point and home plate, as compared to a theoretical pitch thrown at the same speed with no spin-induced movement.
* xwOBA - formulated using exit velocity, launch angle and, on certain types of batted balls, Sprint Speed.
* wOBA - a statistic, based on linear weights, designed to measure a player's overall offensive contributions per plate appearance.
* SwStr% - measures swing and miss rate based on pitch type. EX: (FF Swings and Misses)/(Total # of FF Thrown) \* 100.