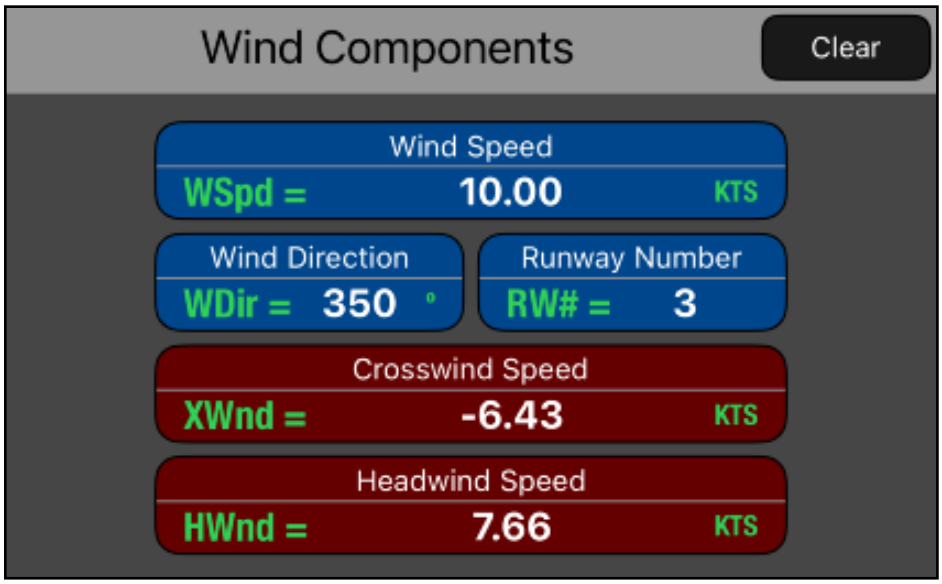
Wind Components Worksheet



Wind Components Buttons	
Clear	Set all variables to a invalid state keeping the current value. If it is touched again, clears all values to 0.
WSpd	**Wind Speed:** Store or validate **WSpd** value for the calculation of **XWnd** and **Hand**.
WDir	**Wind Direction:** Store or validate **WDir** value for the calculation of **XWnd** and **Hand**.
RW#	**Runway Number:** Store or validate **RW#** value for the calculation of **XWnd** and **Hand**.
XWnd	**Cross Wind Speed:** Store or validate **XWnd** value for the calculation of **WSpd** and **WDir**.
HWnd	**Head Wind Speed:** Stores or validate the **Hand** value for the calculation of **WSpd** and **WDir**.

The worksheet computes the headwind or tailwind component and the left or right crosswind component for a given wind and runway. Since runways are numbered by their magnetic course, the wind direction must be magnetic as well (airport wind advisories and runway headings are both magnetic). The runway number must be entered—not the course. The inputs are **WSpd**, **WDir**, and Runway (**RW#**). Remember: it must be the runway number, not the heading. For example, runway 27 (not 270), and runway 9 (not 90). The outputs are crosswind (**XWnd**)—negative is a left crosswind, positive is a right crosswind; headwind (**HWnd**)—positive is a headwind, negative is a tailwind.

NOTE: Always verify the physical units
To change the units of a variable, tap over the unit symbol and select the right one from the pop-up menu. To change the whole units in the worksheet select “Set Metric Units” or “Set US Units” from the **[UNITS▶]** button in the Navigation Bar.

All the following examples use US units. So please select “Set US Units” from the **[UNITS▶]** menu in the Navigation Bar.

Example 1:

Assume a wind of 350° at 10 knots. What are the head/tailwind and crosswind components for a landing on runway 03?.

Solution:

Keystrokes	Description
[Clear] [Clear]	Clears all variables to start a new calculation.
type 10 **[WSpd]**	Stores 10 KTS wind in **WSpd** (the button change to blue).
type 350 **[WDir]**	Stores 350º wind direction in **WDir** (the button change to blue).
type 3 **[RW#]**	Stores the runway #03 in **RW#** and automatically calculates: **XWnd = -6.43 KTS** (left crosswind). **HWnd = 7.66 KTS** (headwind).

Example 2:

If 20 knots wind comes from 270º. What are the head/tailwind and crosswind components for a landing on runway 30?.

Solution:

Keystrokes	Description
[Clear]	Clears all variables to start a new calculation.
type 20 **[WSpd]**	Stores 20 KTS wind in **WSpd** (the button change to blue).
type 270 **[WDir]**	Stores 270º wind direction in **WDir** (the button change to blue).
type 30 **[RW#]**	Stores the runway #30 in **RW#** and automatically calculates: **XWnd = —10.00 KTS** (left crosswind). **HWnd = 17.32 KTS** (headwind).

Appendix : Equations Used

The equations that this worksheet calculates are:

a) Runway Crosswind Component:
XWnd = **WSpd** · SIN(**WDir** - 10·**RW#**)

b) Runway Headwind Component:
HWnd = **WSpd** · COS(**WDir** - 10·**RW#**)