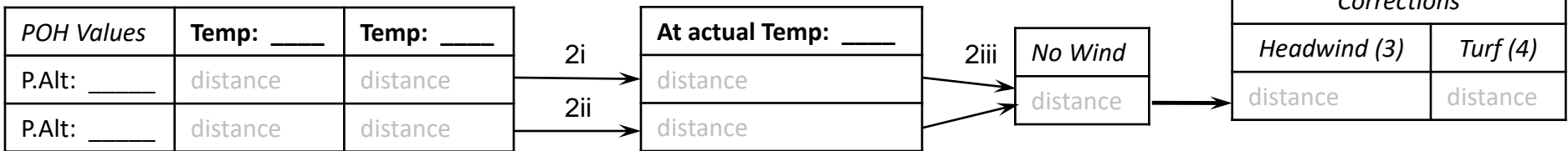# Take-off / Landing Performance

1. Record actual conditions
2. Interpolate ground roll, and distance to clear 50' obstacle (if required) – This step may need to be performed up to 3 times:
   i. Interpolate ground roll at first charted pressure altitude (between temperature)
   ii. Interpolate ground roll at second charted pressure altitude (between temperature)
   iii. Interpolate ground roll from (i) and (ii) between charted pressure altitudes
3. Apply headwind correction
4. Apply turf runway correction (if required)

Actual Conditions (1)

P.Alt.	Temperature	Wind Direction	Wind Speed	Crosswind	Headwind

POH Conditions

POH Values	Temp: ____	Temp: ____
P.Alt: ____	distance	distance
P.Alt: ____	distance	distance

2i
2ii

At actual Temp: ____
distance
distance

2iii

No Wind
distance

Corrections	
Headwind (3)	Turf (4)
distance	distance

Interpolating Distances
To interpolate a distance between 2 temperature values, think of the actual temperature as a fraction of the range (between the charted temperatures). 33°C is 0.30 of the range of 30°C to 40°C, therefore the distance will be 0.30 of the distance listed at 30°C and 40°C. Assuming a pAlt of 1000'. 0.30 of the range from 890' to 960' is 21' (960 - 890 = 70 × 0.30 = 21). Therefore, at 1000'pAlt, and a temperature of 33°C, the takeoff distance is 911'. Using the same process, the takeoff distance at 2000'pAlt, and a temperature of 33°C, the distance is: 1002.5' (1055 - 980 = 75 × 0.30 = 22.5 + 980 = 1002.5)

Use the same technique to interpolate between pressure altitudes. For example a pAlt of 1275' is 0.275 of the range of 1000' and 2000'. At 33°C, and a pAlt of 1275, the takeoff distance is 936.2'
(1002.5 – 911 = 91.5 × 0.275 = 25.2' + 911 = 936.2')
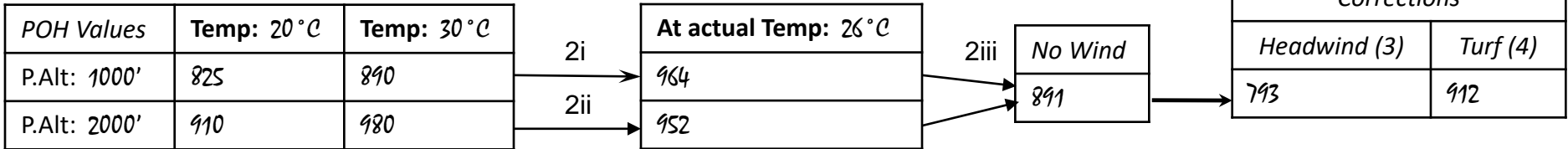
TAKEOFF DISTANCE

PRESS ALT FT	30°C		40°C	
	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
S.L.	810	1495	875	1605
1000	890	1645	960	1770
2000	980	1820	1055	1960

Example – Take-off

Actual Conditions ** Assuming Runway 22, Turf, no obstacle

P.Alt.	Temperature	Wind Direction	Wind Speed	Crosswind	Headwind
1300'	26°C	180°M	13KTS	8 KTS	10 KTS

POH Conditions

POH Values	Temp: 20°C	Temp: 30°C
P.Alt: 1000'	825	890
P.Alt: 2000'	910	980

2i →
2ii →

At actual Temp: 26°C
964
952

2iii →

No Wind
891

→

Corrections	
Headwind (3)	Turf (4)
793	912

Temperature of 26°C is 0.60 of the range of 20°C and 30°C
Pressure altitude of 1300' is 0.300 of the range of 1000' and 2000'

1) At 1000' P.Alt – Interpolate ground roll at **26°C**:

$$890 - 825 = 65 \times 0.60 = 39 + 825 = \textbf{864'}$$

2) At 2000' P.Alt – Interpolate ground roll at **26°C**:

$$980 - 910 = 70 \times 0.60 = 42 + 910 = \textbf{952'}$$

3) At 26°C – Interpolate ground roll at **1300'P.Alt**:

$$952 - 864 = 88 \times 0.300 = 26.4 + 864 = \underline{\textbf{890.4'} \rightarrow \textbf{891}}$$
                                         (Ground Roll)

Headwind Correction:
Percent Reduction:
($\textbf{10KTS} \div 9KTS) \times 10\%$
$= 11.1\%$

Ground Roll - Headwind Correction:
$891' - 11.1\% = \underline{\textbf{792.1'} \rightarrow \textbf{793}}$

Ground Roll - Turf Correction:
$793' + 15\% = \underline{\textbf{911.95'} \rightarrow \textbf{912}}$