

# **USER MANUAL**

## **LANDING DISTANCE CALCULATOR v1.2.1**



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## Introduction

Welcome to the Landing Distance Calculator.

It has been developed to facilitate pilots to calculate normal and non normal landing distances and brake cooling advice quickly for all available flap and brake configurations.

This version includes all KLM Boeing aircraft.

You may use this app completely free of charge. Thanks to a co-operation with [Wings of Support](#) you may, if you wish, make an in app [donation](#) to charity.

It would be appreciated if you could review this app in the [Apple app store](#).

I hope you will enjoy using this app.

Happy landings!

Roland Peeters (Captain 777)

For comments or suggestions please send me an [e-mail](#).

[Disclaimer](#)

## Overview

The Landing Distance Calculator calculates landing distances and brake cooling advice for various aircraft types. It also has an integrated wind calculator and some other features.

The app consists of 4 screens:

- The [main screen](#): displays all input and output.
- The [settings screen](#): is used to select units and filter aircraft types.
- The [user manual screen](#): displays the user manual.
- The [donation screen](#): enables the user to make a donation to charity.

The main screen consists of:

- An [input data display box](#) ①
- A [wind calculator box](#) ②
- A [data entry and selection pad / notes pad](#) ③
- A [calculated landing distance and brake cooling advice output box](#) ④
- An [info box](#) (only available in Portrait mode) ⑤

## Main screen lay-out (Landscape mode)

# LANDING DISTANCE CALCULATOR

<b>Aircraft status</b>	<b>Normal, auto speedbrakes</b> <span>1</span>				<b>WIND CALCULATOR</b> <span>2</span>		
<b>Runway condition</b>	<b>Dry Runway</b>				<b>RUNWAY</b>	<b>WIND</b>	
<b>Landing weight</b>	<b>251 290</b>	<b>kg</b>			<b>HDG (M)</b>	<b>DIR (M)</b>	<b>SPEED</b>
<b>Altitude above sea level</b>	<b>0</b>	<b>ft</b>	<b>QNH</b>	<b>1013</b>	<b>000</b>	<b>000</b>	<b>/ 0</b>
<b>Down (-) / Upslope (+)</b>	<b>0.0</b>	<b>%</b>			<b>AIRCRAFT</b>	<b>ACTUAL</b>	<b>MAX</b>
<b>Head (+) / Tailwind (-)</b>	<b>0</b>	<b>kt</b>	<b>WC = 0</b>		<b>HEAD</b>	<b>0</b>	<b>15T</b>
<b>Temperature</b>	<b>15</b>	<b>°C</b>	<b>ISA = 15 °C</b>		<b>CROSS</b>	<b>0</b>	<b>35</b>
<b>Speed above VREF</b>	<b>5</b>	<b>kt</b>	<b>ADJ(AT OFF) = 5</b>		<b>Taxi miles</b>		<b>0.0</b>
<b>Reverse thrust</b>	<b>2 ENG MAX REV</b>				<b>Brakes deactivated</b>		<b>0</b>

<b>Select Aircraft type</b> <span>3</span>	<b>777-300ER</b>				<b>CALCULATED LANDING DISTANCE (m)</b> <span>4</span>		
737-700W	<b>Flaps</b>						
737-800W	<b>Braking configuration</b>	<b>20</b>	<b>25</b>	<b>30</b>			
737-800WSFP1	MAX MANUAL	<b>1 520</b>	<b>1 408</b>	<b>1 348</b>			
737-900W	AUTOBRAKE MAX	<b>2 092</b>	<b>1 907</b>	<b>1 788</b>			
777-200ER	AUTOBRAKE 4	<b>2 720</b>	<b>2 458</b>	<b>2 296</b>			
777-300ER ✓	AUTOBRAKE 3	<b>3 192</b>	<b>2 876</b>	<b>2 677</b>			
	AUTOBRAKE 2	<b>3 463</b>	<b>3 122</b>	<b>2 918</b>			
	AUTOBRAKE 1	<b>3 722</b>	<b>3 361</b>	<b>3 152</b>			

## Main screen lay-out (Portrait mode)

### LANDING DISTANCE CALCULATOR

Aircraft status	Normal, auto speedbrakes		
Runway condition	Dry Runway		
Landing weight	70 000	kg	<div>1</div> QNH 1013 WC = 0 ISA = 15 °C ADJ(AT OFF) = 5

Enter Landing weight			
7	8	9	⚙
4	5	6	✖
1	2	3	↩
000	0	MLW	

3

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
000	000	0
AIRCRAFT	ACTUAL	MAX
HEAD	0	15T
CROSS	0	33
Taxi miles	0.0	

2

1

RTO	
BOS GS (kt)	Cooling Advice
80	
100	25
120	52
140	
160	
180	

5

737-800WSFP1	CALCULATED LANDING DISTANCE (m) ↔	
	Flaps	
Braking configuration	30	40
MAX MANUAL	1 360	1 300
AUTOBRAKE MAX	1 690	1 595
AUTOBRAKE 3	2 345	2 180
AUTOBRAKE 2	2 875	2 700
AUTOBRAKE 1	3 125	2 965

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## Input data display box lay-out

Aircraft status	Normal, auto speedbrakes	
Runway condition	Dry Runway	
Landing weight	251 290	kg
Altitude above sea level	0	ft QNH 1013
Down (-) / Upslope (+)	0.0	%
Head (+) / Tailwind (-)	0	kt WC = 0
Temperature	15	°C ISA = 15 °C
Speed above VREF	5	kt ADJ(AT OFF) = 5
Reverse thrust	2 ENG MAX REV	

Taxi miles	0.0
Brakes deactivated	0

This image shows the Landscape mode lay-out.

In Portrait mode the input data display box is split in 2 parts.

- 1 The dark blue areas contain the description of the data.
- 2 The white areas contain the data selection and entry fields.
- 3 The light blue box contains calculated data ([WC](#), [ISA](#) and [ADJ\(AT OFF\)](#)).

The **active** data entry or field is marked by a **green box** around the field.

Dry Runway
213 188 kg
0 ft

After tapping the enter key (arrow) at the Brakes deactivated entry field (or Taxi miles entry field when not available) the green box is NOT shown.



## Wind calculator box lay-out

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
000	000	/ 0
AIRCRAFT	ACTUAL	MAX
HEAD	0	15T
CROSS	0	35

- 1 The top blue area contain the description of the data to be entered.
- 2 The white area contain the data entry fields ([Runway heading](#), [Wind direction](#) and [wind speed](#)).
- 3 The lower blue area contains calculated data:
  - [Head- and tailwind speed and direction \(HEAD or TAIL\)](#)
  - [Crosswind speed and direction \(L or R\)](#)
  - [Maximum tailwind](#)
  - [Maximum crosswind](#)

## The 3 data entry and selection pad / notes pad views

SELECTION VIEW	ENTRY VIEW	NOTES VIEW
<p>Displays a list of valid entries for the active selection field.</p> <p>The top blue bar prompts the necessary action, e.g. : “Select Aircraft type”.</p> <p>After tapping a selection the next data field activates automatically.</p>	<p>Displays a keyboard to enable entry of numerical values, a setting key, a backspace and enter key.</p> <p>Also some special keys will be shown depending on the.</p> <p>After tapping the enter key the next data field activates automatically.</p>	<p>Displays:</p> <ul style="list-style-type: none"> <li>• Landing reference speed</li> <li>• Notes in the QRH</li> <li>• Exceedance of MLW</li> <li>• Source information</li> </ul>

SELECTION VIEW	ENTRY VIEW	NOTES VIEW
<p>Pops up at these data fields:</p> <ul style="list-style-type: none"> <li>• Aircraft type</li> <li>• Aircraft status</li> <li>• Runway condition</li> <li>• Reverse thrust</li> </ul>	<p>Pops up at these data fields:</p> <ul style="list-style-type: none"> <li>• Landing weight</li> <li>• Altitude above sea level and QNH</li> <li>• Down-/Upslope</li> <li>• Head-/Tailwind</li> <li>• Temperature</li> <li>• Speed above VREF</li> <li>• Runway heading</li> <li>• Wind direction</li> <li>• Wind speed</li> <li>• Taxi miles</li> <li>• (Brakes deactivated)</li> </ul>	<p>Pops up automatically: after tapping the enter key (arrow) at the Brakes deactivated entry field (or when not available Taxi miles field). It indicates completion of a full data entry cycle according the pre-set sequence.</p> <p>Shown manually: after tapping the exchange symbol in Selection view or Entry view.</p>

## Calculated landing distance and brake cooling advice views

CALCULATED LANDING DISTANCE VIEW	BRAKE COOLING ADVICE VIEW																																																																						
<table><tr><th rowspan="2">777-300ER</th><th colspan="3">CALCULATED LANDING DISTANCE (m) ⇌</th></tr><tr><th colspan="3">Flaps</th></tr><tr><th>Braking configuration</th><th>20</th><th>25</th><th>30</th></tr><tr><td>MAX MANUAL</td><td>1 520</td><td>1 408</td><td>1 348</td></tr><tr><td>AUTOBRAKE MAX</td><td>2 092</td><td>1 907</td><td>1 788</td></tr><tr><td>AUTOBRAKE 4</td><td>2 720</td><td>2 458</td><td>2 296</td></tr><tr><td>AUTOBRAKE 3</td><td>3 192</td><td>2 876</td><td>2 677</td></tr><tr><td>AUTOBRAKE 2</td><td>3 463</td><td>3 122</td><td>2 918</td></tr><tr><td>AUTOBRAKE 1</td><td>3 722</td><td>3 361</td><td>3 152</td></tr></table>	777-300ER	CALCULATED LANDING DISTANCE (m) ⇌			Flaps			Braking configuration	20	25	30	MAX MANUAL	1 520	1 408	1 348	AUTOBRAKE MAX	2 092	1 907	1 788	AUTOBRAKE 4	2 720	2 458	2 296	AUTOBRAKE 3	3 192	2 876	2 677	AUTOBRAKE 2	3 463	3 122	2 918	AUTOBRAKE 1	3 722	3 361	3 152	<table><tr><th rowspan="2">777-300ER</th><th colspan="3">BRAKE COOLING ADVICE ⇌</th></tr><tr><th colspan="3">Flaps</th></tr><tr><th>Braking configuration</th><th>20</th><th>25</th><th>30</th></tr><tr><td>MAX MANUAL</td><td>MELT ZONE</td><td>CAUTION</td><td>CAUTION</td></tr><tr><td>AUTOBRAKE MAX</td><td>CAUTION</td><td>71 min</td><td>63 min</td></tr><tr><td>AUTOBRAKE 4</td><td>56 min</td><td>44 min</td><td>35 min</td></tr><tr><td>AUTOBRAKE 3</td><td>27 min</td><td>12 min</td><td>NO PROC</td></tr><tr><td>AUTOBRAKE 2</td><td>NO PROC</td><td>NO PROC</td><td>NO PROC</td></tr><tr><td>AUTOBRAKE 1</td><td>NO PROC</td><td>NO PROC</td><td>NO PROC</td></tr></table>	777-300ER	BRAKE COOLING ADVICE ⇌			Flaps			Braking configuration	20	25	30	MAX MANUAL	MELT ZONE	CAUTION	CAUTION	AUTOBRAKE MAX	CAUTION	71 min	63 min	AUTOBRAKE 4	56 min	44 min	35 min	AUTOBRAKE 3	27 min	12 min	NO PROC	AUTOBRAKE 2	NO PROC	NO PROC	NO PROC	AUTOBRAKE 1	NO PROC	NO PROC	NO PROC
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<p>Displays:</p> <ul style="list-style-type: none"><li>Selected aircraft type</li><li>Available braking configurations</li><li>Available flap configurations</li><li>Calculated landing distances</li><li>Brake cooling advice (colour only)</li></ul>	<p>Displays:</p> <ul style="list-style-type: none"><li>Selected aircraft type</li><li>Available braking configurations</li><li>Available flap configurations</li><li>Brake cooling advice (colour and text)</li></ul>																																																																						
<p>The exchange button alters between calculated landing distance and brake cooling advice view.</p> <p>This view is the default view.</p>	<p>The exchange button alters between calculated landing distance and brake cooling advice view.</p>																																																																						

## Info box views

RTO BRAKE COOLING VIEW	(more views will be published later)																	
<table><tr><th colspan="2">RTO</th></tr><tr><th>Cooling Advice</th><th>BOS GS (kt)</th></tr><tr><td>80</td><td></td></tr><tr><td>100</td><td>25</td></tr><tr><td>120</td><td>52</td></tr><tr><td>140</td><td></td></tr><tr><td>160</td><td></td></tr><tr><td>180</td><td></td></tr></table>	RTO		Cooling Advice	BOS GS (kt)	80		100	25	120	52	140		160		180			
RTO																		
Cooling Advice	BOS GS (kt)																	
80																		
100	25																	
120	52																	
140																		
160																		
180																		
<div>Displays:<ul style="list-style-type: none"><li>RTO (Rejected Takeoff) brake cooling advice.</li></ul></div>																		
<div>This view is only available in portrait mode.</div>																		





# LANDING DISTANCE CALCULATOR

Aircraft status	Normal, auto speedbrakes				WIND CALCULATOR		
Runway condition	Dry Runway				RUNWAY	WIND	
Landing weight	251 290	kg			HDG (M)	DIR (M)	SPEED
Altitude above sea level	0	ft	QNH	1013	000	000	/ 0
Down (-) / Upslope (+)	0.0	%			AIRCRAFT	ACTUAL	MAX
Head (+) / Tailwind (-)	0	kt	WC = 0		HEAD	0	15T
Temperature	15	°C	ISA = 15 °C		CROSS	0	35
Speed above VREF	5	kt	ADJ(AT OFF) = 5		Taxi miles		0.0
Reverse thrust	2 ENG MAX REV				Brakes deactivated		0

Select Aircraft type ⇌	777-300ER			CALCULATED LANDING DISTANCE (m) ⇌			
737-700W	<b>Braking configuration</b>			Flaps			
737-800W				20	25	30	
737-800WSFP1				MAX MANUAL	1 520	1 408	1 348
737-900W				AUTOBRAKE MAX	2 092	1 907	1 788
777-200ER				AUTOBRAKE 4	2 720	2 458	2 296
777-300ER ✓				AUTOBRAKE 3	3 192	2 876	2 677
				AUTOBRAKE 2	3 463	3 122	2 918
	AUTOBRAKE 1	3 722	3 361	3 152			

## Legend

Below is a legend of several symbols that you will see in the app.

	<p>Exchange:</p> <ul style="list-style-type: none"><li>• Changes data entry and selection pad to Notes pad and vice versa.</li><li>• Alters between Calculated Landing Distance and Brake Cooling Advice.</li><li>• Returns from settings screen to main screen.</li><li>• Returns from user manual screen to settings screen.</li></ul>
	<p>Backspace:</p> <ul style="list-style-type: none"><li>• Deletes the last digit in the active data field.</li><li>• If held for 3 seconds resets all input to default except Aircraft type.</li></ul>
	<p>Settings:</p> <ul style="list-style-type: none"><li>• Displays the settings screen.</li></ul>
	<p>Enter:</p> <ul style="list-style-type: none"><li>• Changes the active data field to the next field according a predetermined entry sequence. (Upon typing data or selecting data calculation is instantaneous, so in fact this button only moves to the next area.)</li></ul>

## Input

All input on the main screen is done through the data entry and selection pad in the left lower corner. Through this pad entries and selections can be made.

The visual lay-out of the pad is configured automatically depending on the type of data that needs to be entered or selected.

The top blue bar of the pad shows the action to be taken, e.g. “Select Aircraft type” or “Enter Landing weight”.

The area in which data can be entered or selected is marked by a green box.

Data entry and selection is done in a predetermined sequence. That means that after making a selection or tapping the arrow key the green box moves automatically to the next entry or selection field. This is done to speed up the entry process, however you may also select any field manually and enter or select data in any desired sequence. For this purpose tap the desired field, the green box will move to that field after which the pad configures automatically.

Upon start-up of the app the active field is the Aircraft type selection box.



## Data input fields overview

# LA **INPUT** DISTANCE CALCULATOR

Aircraft status	Normal, auto speedbrakes		WIND CALCULATOR		
Runway condition	Dry Runway		RUNWAY	WIND	
Landing weight	251 290	kg	HDG (M)	DIR (M)	SPEED
Altitude above sea level	0	ft	QNH 1013	000	000 / 0
Down (-) / Upslope (+)	0.0	%	AIRCRAFT	ACTUAL	MAX
Head (+) / Tailwind (-)	0	kt	HEAD	0	15T
Temperature	15	°C	CROSS	0	35
Speed above VREF	5	kt	Taxi miles		0.0
Reverse thrust	2 ENG MAX REV		Brakes deactivated		0

Select Aircraft type		CALCULATED LANDING DISTANCE (m)		
737-700W		Flaps		
737-800W		20	25	30
737-800WSFP1		MAX MANUAL	1 520	1 408
		AUTOBRAKE MAX	2 092	1 907
737-900W		AUTOBRAKE 4	2 720	2 458
777-200ER		AUTOBRAKE 3	3 192	2 876
777-300ER	✓	AUTOBRAKE 2	3 463	3 122
		AUTOBRAKE 1	3 722	3 361

## Pre-set data entry and selection sequence

# LANDING DISTANCE CALCULATOR

Aircraft status	Normal, auto <b>2</b> eedbrakes	<b>WIND CALCULATOR</b>		
Runway condition	Dry Runway	RUNWAY	WIND	
Landing weight	251 290 kg	HDG (M)	DIR (M)	SPEED
Altitude above sea level	0 ft <b>3</b> ONH 1013	000	000	0
Down (-) / Upslope (+)	0.0 %	AIRCRAFT	ACTUAL	MAX
Head (+) / Tailwind (-)	0 kt WC = 0	HEAD	0	15T
Temperature	15 °C ISA = 15 °C	CROSS	0	35
Speed above VREF	5 kt ADJ(AT OFF) = 5	Taxi miles		0.0 <b>4</b>
Reverse thrust	2 ENG MAX REV	Brakes deactivated		0

Select Aircraft type	↔
737-700W	
737-800W	
737-800WSFP1	
737-900W	
777-200ER	
777-300ER	✓
787-9	

777-300ER <b>1</b>	CALCULATED LANDING DISTANCE (m) ↔		
Braking configuration	Flaps		
	20	25	30
MAX MANUAL	1 520	1 408	1 348
AUTOBRAKE MAX	2 092	1 907	1 788
AUTOBRAKE 4	2 720	2 458	2 296
AUTOBRAKE 3	3 192	2 876	2 677
AUTOBRAKE 2	3 463	3 122	2 918
AUTOBRAKE 1	3 722	3 361	3 152

Upon **start-up** of the app the aircraft type selection is shown and these **default values** are loaded:

Aircraft type	B777-300ER or previously selected type
Aircraft status	Normal, auto speedbrakes
Runway condition	Dry Runway
Landing weight	MLW (Maximum Landing Weight)
Altitude above sea level	0
QNH	STD (1013 hPa or 29.92 inHg)
Down- / Upslope	0.0
Head- / Tailwind	0
Temperature	ISA (15 °C or 59 °F)
Speed above VREF	5
Reverse thrust	2 ENG MAX REV
Runway heading	000
Wind direction	000
Wind speed	0
Taxi miles	0.0
Brakes deactivated (if applicable)	0

When holding the backspace button for 3 seconds the default values are restored.

## Invalid data

Invalid data means entries or results of which the value is either:

- exceeding an aircraft limitation, e.g. Runway slope 3.0 or Crosswind 50  
– OR –
- not realistic, e.g. QNH 800 or Runway heading 400

The landing distance calculator will allow entry of invalid input and will warn you by the change of text colour into **RED** with a **PINK** background.

**Invalid INPUT will disable OUTPUT.**

Aircraft status Runway condition Landing weight Altitude above sea level Down (-) / Upslope (+) Head (+) / Tailwind (-) Temperature Speed above VREF Reverse thrust	HYD PRESS SYS L+C				WIND CALCULATOR		
	Medium Reported Braking Action				RUNWAY	WIND	
	251 290	kg			HDG (M)	DIR (M)	SPEED
	0	ft	QNH	1013	002	310	/ 12G35
	2.5	%			AIRCRAFT	ACTUAL	MAX
	0	kt	WC = 22		HEAD	21.5	10T
	15	°C	ISA = 15 °C		CROSS L	27.6	20
	5	kt	ADJ(AT OFF) = 15		Taxi miles		0.0
	2 ENG MAX REV				Brakes deactivated		0

The table below shows the values outside which the calculator will regard the input as invalid.

Entry field	Invalid below	Invalid above
Landing weight	Minimum Inflight Weight	Maximum Takeoff Weight
Altitude above sea level	-1 240	Maximum Landing Altitude
QNH	950 hPa / 28.00 inHg	1050 hPa / 31.00 inHg
Down- / Upslope	-2.0	+2.0
Head- / Tailwind	Maximum tailwind	65 kts (not a limitation)
Temperature	-54 °C	+54 °C
Speed above VREF	0	15 (777 / 787) / 20 (737)
Runway heading		360
Wind direction		360

Wind speed with gust speed at or below mean wind speed is regarded as invalid.

The aircraft status selection will become invalid when the aircraft type is changed and the current aircraft status does not match that aircraft type.

The reverse thrust selection will become invalid when the aircraft status is changed to a status that does not allow the current reverse thrust selection, e.g. the combination of 2 ENG MAX REV and ENG SHUTDOWN L, R.

## Aircraft type

When the Aircraft type selection is active the data entry pad will prompt “Select Aircraft type”.

All available aircraft types are listed in the selection box. The aircraft types available are determined by selections in the settings screen.

Aircraft type selection activates the next field: Aircraft condition selection.

## Aircraft status

When the Aircraft status selection is active the data entry pad will prompt "Select Aircraft status".

All normal and non normal aircraft statuses are listed in the selection box.

A check mark is visible behind the current aircraft status.

Aircraft status activates the Runway condition selection.

## Runway condition

When the Runway condition selection is active the data entry pad will prompt “Select Runway condition”.

All runway conditions are listed in the selection box.

A check mark is visible behind the current runway condition.

Runway condition selection activates the Landing weight entry.



## Landing weight

When the Landing weight entry is active the data entry pad will prompt “Enter Landing weight”.

Type the digits to form the landing weight.

The 000 key will paste 000 behind the digits entered provided not more than 3 digits were entered.

The MLW key will replace the existing value with the Maximum Landing Weight.

Landing weight entries above Maximum Landing weight will cause the value turn red; and output will still be displayed.

Landing weight entries below Minimum Inflight weight or above Maximum Takeoff weight will turn red with pink background; and output is disabled.

Tapping the enter key will activate the Altitude above sea level entry.

## Altitude above sea level

When the Altitude above sea level entry is active the data entry pad will prompt “Enter Runway elevation”.

Type the digits to form the runway elevation.

The 000 key will paste 000 behind the digits entered provided not more than 2 digits were entered.

To enter an altitude below sea level the minus (–) key may be pressed before or after entering the digits.

Tapping the enter key will activate the QNH entry.

## QNH

When the QNH entry is active the data entry pad will prompt “Enter QNH”.

Type the digits to form the QNH.

The STD key will replace the existing value with 1013 or 29.92 depending on the pressure setting in the settings screen.

Tapping the enter key will activate the Runway heading entry.

## Runway heading

When the Runway heading entry is active the data entry pad will prompt “Enter Runway heading”.

Type the digits to form the magnetic runway heading.

Tapping the enter key will activate the Wind direction entry.

## Wind direction

When the Wind direction entry is active the data entry pad will prompt “Enter Wind direction”.

Type the digits to form the magnetic wind direction.

The VRB (Variable) key will paste VRB as wind direction value. The logic then is that the wind direction is assumed be 180 degrees of the Runway heading at the previous entry. So VRB / 5 will be regarded as 5 knots tailwind.

Entry of variable wind between 2 wind directions is not supported.

Wind direction entries have NO effect on the calculated landing distances or brake cooling advice.

Tapping the enter key will activate the Wind speed entry.

## Wind speed

When the Wind speed entry is active the data entry pad will prompt “Enter Wind speed”.

Type the digits to form the wind speed.

The G (Gust) key may be used to enter gusting wind. E.g. windspeed 15 knots gusting 25 knots can be entered as 15G25

Wind speed entries have NO effect on the calculated landing distances or brake cooling advice.

Tapping the enter key will activate the Down- / Upslope entry.

## Down- / Upslope

When the Down- / Upslope entry is active the data entry pad will prompt “Enter Runway slope”.

Type the digits to form the slope.

To enter a negative slope the minus (–) key may be pressed before or after entering the digits.

Tapping the enter key will activate the Head- / Tailwind entry.

## Head- / Tailwind

When the Head- / Tailwind entry is active the data entry pad will prompt “Enter Wind”.

Type the digits or use the WC key to form the wind.

The WC (Wind Component) key will paste the value in the light blue box mentioned after “WC =”. This is handy when correct values were entered in the wind calculator.

To enter a tailwind the minus (–) key may be pressed before or after entering the digits.

Tapping the enter key will activate the Temperature entry.



## Temperature

When the Temperature entry is active the data entry pad will prompt “Enter Temperature”.

Type the digits to form the temperature.

The ISA (International Standard Atmosphere) key will paste the value in the light blue box mentioned after “ISA =”.

To enter a negative temperature the minus (–) key may be pressed before or after entering the digits.

Tapping the enter key will activate the Speed above VREF entry.

## Speed above VREF

When the Speed above VREF entry is active the data entry pad will prompt “Enter Speed above VREF”.

Type the digits or use the ADJ (AT OFF) key to form the speed above VREF.

The ADJ (AT OFF) key will paste the value in the light blue box mentioned after “ADJ (AF OFF) =”. This is handy when correct values were entered in the wind calculator and a landing is made with autothrottle OFF. For landings with autothrottle ON Boeing prescribes a 5 knot adjustment.

With aircraft condition Airspeed Unreliable data entry is disabled and the text Speed above VREF will be shown as **~~Speed above VREF~~**

Tapping the enter key will activate the Reverse thrust selection.

## Reverse thrust

When the Reverse thrust selection is active the data entry pad will prompt “Select Reverse thrust”.

All available reverse thrust options are listed in the selection box.

A check mark is visible behind the current reverse thrust option if available.

Reverse thrust selection will activate the Taxi miles entry.

## Taxi miles

When the Taxi miles entry is active the data entry pad will prompt “Enter Taxi miles”.

Type the digits to form the amount of miles that is expected to be taxied after landing.

The Taxi miles entry only has effect on the brake cooling advice.

777/787: Tapping the enter key will activate the Brakes deactivated entry.

737: The Taxi miles entry is regarded as the completion of a full data entry cycle. Upon tapping the enter key the green box will not be visible anymore and the notes pad will replace the data entry pad.

## Brakes deactivated

When the Brakes deactivated entry is active the data entry pad will prompt “Enter Brakes deactivated”.

Type 0, 1 or 2 depending on how many brakes are deactivated.

1 or 2 deactivated brakes have no effect on the landing distance. They will however increase the brake energy in the remaining brakes and will increase the amount of brake cooling needed.

The Brakes deactivated entry is regarded as the completion of a full data entry cycle. Upon tapping the enter key the green box will not be visible anymore and the notes pad will replace the data entry pad.

## Output

All output is displayed on the main screen.

Output consists of:

- [Calculated landing distance](#)
- [Brake cooling advice for landing](#)
- [Brake cooling advice for RTO](#)
- [Notes](#)
- [WC](#)
- [ISA](#)
- [ADJ \(AT OFF\)](#)
- [Wind components](#)
- [Wind limitations](#)

## Data output lay-out (Landscape mode)

# LA **OUTPUT** DISTANCE CALCULATOR

Aircraft status	Normal, auto speedbrakes				<b>WIND CALCULATOR</b>		
Runway condition	Dry Runway				RUNWAY	WIND	
Landing weight	251 200	kg			HDG (M)	DIR (M)	SPEED
Altitude above sea level	0	ft	QNH	1013	000	000	/ 0
Down (-) / Upslope (+)	0.0	%			AIRCRAFT	ACTUAL	MAX
Head (+) / Tailwind (-)	0	kt		WC = 0	HEAD	0	15T
Temperature	15	°C		ISA -15 °C	CROSS	0	35
Speed above VREF	5	kt		ADJ(AT OFF) = 5	Taxi miles		0.0
Reverse thrust	2 ENG MAX REV				Brakes deactivated		0

Select Aircraft type ⇐	<b>777-300ER</b>				CALCULATED LANDING DISTANCE (m) ⇐		
737-700W	Flaps						
737-800W	Braking configuration	20	25	30			
737-800WSFP1	MAX MANUAL	1 520	1 408	1 348			
737-900W	AUTOBRAKE MAX	2 092	1 907	1 788			
777-200ER	AUTOBRAKE 4	2 720	2 458	2 296			
777-300ER ✓	AUTOBRAKE 3	3 192	2 876	2 677			
	AUTOBRAKE 2	3 463	3 122	2 918			
	AUTOBRAKE 1	3 722	3 361	3 152			

## Data output lay-out (Portrait mode)

OUTPUT

Runway condition	Dry Runway		
Landing weight	251 230	kg	
Altitude above sea level	0	ft	<b>QNH 1013</b>
Down (-) / Upslope (+)	0.0	%	
Head (+) / Tailwind (-)	0	kt	
Temperature	15	°C	
Speed above VREF	5	kt	
Reverse thrust	2 ENG MAX REV		

WC = 0	
ISA = 15 °C	
ADJ(AT OFF) = 5	

Select Aircraft type
737-700W
737-800W
737-800WSFP1
737-900W
777-200ER
777-300ER <input checked="" type="checkbox"/>

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
000	000	/ 0
AIRCRAFT	ACTUAL	MAX
HEAD	0	15T
CROSS	0	35
Taxi miles		0.0
Brakes deactivated		0

RTO	
BOS (kt)	Cooling Advice
80	16
100	49
120	75
140	
160	
180	

777-300ER	CALCULATED LANDING DISTANCE (m) ⇌		
	Flaps		
Braking configuration	20	25	30
MAX MANUAL	1 520	1 408	1 348
AUTOBRAKE MAX	2 092	1 907	1 788
AUTOBRAKE 4	2 720	2 458	2 296
AUTOBRAKE 3	3 192	2 876	2 677
AUTOBRAKE 2	3 463	3 122	2 918
AUTOBRAKE 1	3 722	3 361	3 152



## Calculated landing distance

The calculated landing distance box contains:

- 1 Braking configuration.
- 2 Flap configuration.
- 3 Landing distances and brake cooling advice (colour)

<b>777-300ER</b>		<b>CALCULATED LANDING DISTANCE (m) ⇌</b>		
		<b>Flaps</b>		
<b>Braking configuration</b>		20	25	30
MAX MANUAL		1 520	1 408	1 348
AUTOBRAKE MAX		2 092	1 907	1 788
AUTOBRAKE 4		2 720	2 458	2 296
AUTOBRAKE 3		3 192	2 876	2 677
AUTOBRAKE 2		3 463	3 122	2 918
AUTOBRAKE 1		3 722	3 361	3 152

<b>787-9</b>		CALCULATED LANDING DISTANCE (m) ⇄	
		Flap position	
Braking configuration	1 ≤ Flaps ≤ 5		
MAX MANUAL	1 838		
AUTOBRAKE MAX	2 323		
AUTOBRAKE 4			
AUTOBRAKE 3			
AUTOBRAKE 2	3 490		
AUTOBRAKE 1			

Note that the text in these boxes has changed to reflect the exact wording in the QRH for FLAPS DRIVE:

**Flap position and (1≤Flaps≤5)**

A cell without a value means that no landing distance is available for this brake configuration. However a brake cooling advice is available.

For aircraft conditions where autobrakes are inoperative this will be shown as depicted.

Note that these cells are white because there is no other flap configuration available for this aircraft condition.

<b>737-800WSFP1</b>		CALCULATED LANDING DISTANCE (m) ⇄		
		Flaps		
Braking configuration		15	30	40
MAX MANUAL		1 948	1 866	1 800
AUTOBRAKE INOP				
AUTOBRAKE INOP				
AUTOBRAKE INOP				
AUTOBRAKE INOP				

<b>737-900W</b>		CALCULATED LANDING DISTANCE (m) ⇄		
		Flaps		
Braking configuration		15	30	
MAX MANUAL		1 345	1 260	
AUTOBRAKE MAX		1 640	1 525	
AUTOBRAKE 3				
AUTOBRAKE 2		3 005	2 720	
AUTOBRAKE 1				

<b>777-300ER</b>	<b>CALCULATED LANDING DISTANCE (m) ⇌</b>		
	<b>Flaps</b>		
<b>Braking configuration</b>	20		<b>30</b>
MAX MANUAL	1 395		1 230
AUTOBRAKE MAX	1 860		1 595
AUTOBRAKE 4			
AUTOBRAKE 3			
AUTOBRAKE 2	3 230		2 695
AUTOBRAKE 1			

**30** will be shown in red colour for the following conditions:

- Aircraft type 777-200ER or 777-300ER – AND –
- Landing weight > Maximum landing weight  
– AND –
- Aircraft condition is ENG SHUTDOWN L, R – OR –
- VREF30 + additives (wind and gusts, 5 knots minimum) is above
  - 160 kts (777-200ER)
  - 170 kts (777-300ER)

For the above conditions the QRH may preclude the use of Flaps 30.

## Brake cooling advice for landing

Brake cooling advice for landing is always shown by the background colour in each landing distance field. When the brake cooling advice view is selected the advice is also visible in text format. The advice is for ground cooling only.

The meaning of the colours is:

	<b>MELT ZONE</b>	<b>Fuse plug melt zone</b>
	<b>CAUTION</b>	<b>Caution zone</b>
<b>10</b>	<b>10 min</b>	<b>Brake cooling advice for 10 minutes</b>
	<b>NO PROC</b>	<b>No procedures</b>
		<b>No brake cooling advice available</b>

## Brake cooling advice for RTO (Rejected Takeoff)

Brake cooling advice for RTO is always shown by the background colour in the info box whenever the app is used in portrait mode.

RTO	
BOS GS (kt)	Cooling Advice
80	
100	25
120	52
140	
160	
180	

BOS GS (kt): This column lists Brake ON Speeds in knots Ground Speed. According the Boeing tables the brake cooling is determined by entering the published tables with 15C, sea level.

Cooling Advice: This column lists the Brake Cooling Advice in the event of a rejected takeoff.

The weight used for calculation in the weight entered at the Landing weight entry. Output is removed for weights below Minimum Inflight Weight and above Maximum Takeoff Weight.

Brake ON Speed based on Indicated Airspeed is NOT supported.

## Notes

Notes includes:

- Landing reference speed as mentioned in the QRH
- Other remarks mentioned in the QRH
- Source information. This is the footer information on the QRH page.
- If the landing weight > MLW a note in RED colour is included stating the overweight condition and the MLW.

## WC = Wind component

The value is derived from the wind calculator.

It is the Head- / Tailwind component including gusts.

- WC = - 10 means 10 kts tailwind
- WC = 25 means 25 kts headwind

The value may be entered easily with a single tap on the WC button.

The WC button is available when the Head- / Tailwind entry is active.

## ISA

This is the standard temperature at the altitude above sea level (runway elevation).

If the actual temperature happens to be ISA the value may be entered easily with a single tap on the ISA button.

The ISA button is available when the Temperature entry is active.



## **ADJ (AT OFF) = Adjustment (Autothrottle OFF)**

The value is derived from the wind calculator. It uses wind component and wind speed and gusts to calculate the speed adjustment above VREF for landing with autothrottle OFF. The calculation is done in accordance with the Boeing rules.

The value may be entered easily with a single tap on the ADJ (AT OFF) button.

The ADJ (AT OFF) button is available when the Speed above VREF entry is active.

For landings with autothrottle ON a speed adjustment of 5 kts should be used.

# Wind components

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
002	310	/ 10G25
AIRCRAFT	ACTUAL	MAX
HEAD	15.4	15T
CROSS L	19.7	35

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
002	310	/ 10G25
AIRCRAFT	ACTUAL	MAX
HEAD	15.4	10T
CROSS L	19.7	17

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
030	240	/ 12
AIRCRAFT	ACTUAL	MAX
TAIL	10.4	15T
CROSS L	6	20

The wind components are displayed at the left lower corner of the wind calculator.

The available information is:

- Head- or tailwind
- Head- or tailwind component
  - Headwind is GREEN
  - Tailwind is
    - WHITE (within limits)
    - RED/PINK background (outside limits)
- Crosswind direction (L or R)
- Crosswind component
  - Crosswind is
    - GREEN (within limits)
    - RED/PINK background (outside limits)

## Wind limitations

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
002	310	/ 10G25
AIRCRAFT	ACTUAL	MAX
HEAD	15.4	15T
CROSS L	19.7	35

The wind limitations are displayed at the right lower corner of the wind calculator.

The available information is:

- Maximum tailwind
- Maximum crosswind

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
002	310	/ 10G25
AIRCRAFT	ACTUAL	MAX
HEAD	15.4	10T
CROSS L	19.7	17

Factors taken into account for these limitations are:

- Aircraft type
- Aircraft status
  - Reduction of crosswind limits for certain aircraft conditions, e.g. FLIGHT CONTROLS
- Runway conditions
- Reverse thrust
  - 5 kts reduction of max. crosswind in case of asymmetrical reverse on wet and contaminated runways

WIND CALCULATOR		
RUNWAY	WIND	
HDG (M)	DIR (M)	SPEED
030	240	/ 12
AIRCRAFT	ACTUAL	MAX
TAIL	10.4	15T
CROSS L	6	20


B737: Autoland tailwind restrictions are NOT accounted for.

B787: EEC MODE in ALTERNATE tailwind restriction is NOT accounted for.

## Settings


The settings screen consists of:

- 1 A unit selection area ([Weight](#), [Distance](#), [Pressure](#), [Temperature](#))
- 2 An [aircraft type selection box](#)
- 3 A link to the [donation screen](#)
- 4 A link to the [user manual screen](#)
- 5 An exchange button
- 6 A selector which switches on or off the keyboard click sound

The settings can be accessed through the  symbol on the data entry pad.

When tapping the exchange button the main screen view is restored.

## Settings screen lay-out

**4**

# SETTINGS

**5** ⇌

### UNITS **1**

Weight

kg

lbs

Pressure

hPa

inHg

Sound

on

off

Distance

m

ft

Temperature

°C


°F

### OTHER **6**

### AIRCRAFT

Select	Type	Engines	Certification	Brakes <b>2</b>
<input checked="" type="checkbox"/>	737-700W	CFM56-7B22	JAA	Category M Brakes
<input checked="" type="checkbox"/>	737-800W	CFM56-7B24	JAA	Category N Brakes
<input checked="" type="checkbox"/>	737-800WSFP1	CFM56-7B24	JAA	Category N Brakes
<input checked="" type="checkbox"/>	737-900W	CFM56-7B26	JAA	Category O Brakes
<input checked="" type="checkbox"/>	777-200ER	GE90-94B	JAA	Category A Brakes
<input checked="" type="checkbox"/>	777-300ER	GE90-115BL	JAA	Category B Brakes
<input checked="" type="checkbox"/>	787-9	GENX-1B74-75	EASA	Category C Brakes
<input checked="" type="checkbox"/>	787-10	GENX-1B76A	EASA	Category D Brakes

If you like this app please consider to make a donation to Wings of Support. Then you will help children to get a better life. Thank you! Roland Peeters

**3**  
Click to donate

## Weight

Changes the default landing weight unit.

Selectable values are kg (kilogram) and lbs (pounds).

The landing weight entry field unit is changed accordingly.

## Distance

Changes the default landing distance unit.

Selectable values are m (meters) and ft (feet).

The calculated landing distance unit is changed accordingly.

## Pressure

Changes the default QNH unit.

Selectable values are hPa (hectopascal) and inHg (inches mercury)



## Temperature

Changes the default temperature setting.

The default temperature setting is degrees Celsius.

With this version of the app Fahrenheit is not supported, so it is not possible to change this setting.

## Aircraft

The section below AIRCRAFT shows a table with aircraft types that are within the app's database.

The left column contains checkboxes. Only aircraft that are checked are visible in the aircraft type selection pad on the main screen.

You may uncheck the boxes for aircraft that you do not use.

It is not possible to:

- deselect all aircraft types. At least 1 type must be selected.
- deselect the aircraft type that was last selected on the main screen. If you want to deselect that aircraft type:
  - go to the main screen.
  - select an aircraft type that you do not want to delete.
  - go back to the settings page to deselect the aircraft type.

The list of aircraft matches the current KLM Boeing fleet.

Please note that not only the aircraft type but also the type/model of the engines, the certification basis and type of brakes is included in this table. If your airline also has similar aircraft types please check carefully if the engines, certification and brakes are identical; if not the calculation results will be different. Please refer to [Updates](#) for more information.

## Donation

The donation screen is shown as a pop-up over the settings screen.

It becomes visible after tapping the Wings of Support logo.

When tapping outside the pop-up area the settings screen is restored.

3 buttons allow to select an amount of € 5, € 10 or a custom amount. ①

The active amount is highlighted in orange colour.

Payment by iDeal or credit card is done by tapping the Donate button. ②

Alternatively you may donate directly via the Wings of Support website. ③

Apple does NOT get a share of this payment and 100% of the money will go directly to Wings of Support. For more information about this charity organization please visit [wingsofsupport.org/en](https://wingsofsupport.org/en)



## Donation screen lay-out



# SETTINGS



### UNITS

Select	Type
<input checked="" type="checkbox"/>	7
<input checked="" type="checkbox"/>	7
<input checked="" type="checkbox"/>	7
<input checked="" type="checkbox"/>	7
<input checked="" type="checkbox"/>	7
<input checked="" type="checkbox"/>	7
<input checked="" type="checkbox"/>	7
<input checked="" type="checkbox"/>	787-10

	GENX-1B76A	EASA	Category D Brakes
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## Donate to Wings of Support

Your donation will go directly to charity. Please choose or enter an amount below and click Donate. Thank you!

€5

€10

€ Enter <sup>1</sup>

Donate <sup>2</sup>

[Donate using Website](#) <sup>3</sup>

If you like this app please consider to make a donation to Wings of Support. Then you will help children to get a better life. Thank you! Roland Peeters



Click to donate

## User manual

The user manual screen displays a PDF file and a navigator in the right upper corner **1**. The exchange button links back to the settings screen.



## Updates

This version of the app contains data for the whole KLM Royal Dutch Airlines Boeing fleet. On request the app could be made suitable for other airlines, other aircraft types and variants. For this please send me an [e-mail](#).

The data in this app is extracted digitally from the QRH; so no manual entry of data has been done. The notes pad in the left hand lower corner of the main screen specifies the source of the data, including the date. This way you can verify if it matches your QRH. When new updates become available I will pursue to publish an update of the app in the app store.

My experience has learned that since the certification of the aircraft the landing distances itself are not likely to change and that updates mostly concern other aspects of the landing distance tables.

For latest news on upcoming updates please visit [landingdistancecalculator.com](http://landingdistancecalculator.com).

The next chapter shows the [revision history](#) of this app.

# Revision history

## v1.0 (21/09/2021)

- first release

## v1.1 (21/10/2021)

- 777-200ER and 777-300ER FUEL QTY LOW, manual speedbrakes distance issue fixed.
- Changed colours for both day and night modes to improve readability.
- Output is now disabled in case of entry of invalid data.
- Landing weight input now valid up to Maximum Take-off Weight.
- Landing weights above Maximum Landing Weight which do not exceed Maximum Take-off Weight are now shown in RED.
- Changed the keypad click sound to the iOS default sound.
- Fixed donation payment issue.
- Added a function that resets all input to default if the Backspace button is held for 3 seconds.
- Fixed taxi miles entry issue.
- Updated user manual
- Other minor bug fixes.

## v1.1.1 (03-11-2021)

- Fixed Vref ADJ(AT OFF) issue for gusty winds.
- Introduced possibly to turn off keyboard click in settings.



#### v1.1.2 (15-11-2021)

- Fixed issue with maximum tailwind for B737.
- Settings page: corrected engine, certification and brakes data for B737-700W.
- Updated user manual.

#### v.1.2 (1-1-2022)

- Added portrait mode.
- Added RTO brake cooling advice.
- Notes regarding landing weight exceedances are shown in red colour.
- Minor bug fixes.
- Updated user manual.

#### v.1.2.1 (3-1-2022)

- Fixed a bug in the RTO brake cooling info box.
- Updated user manual.

## Credits

Roland Peeters (Creation & Design)

Joris Zadelhof (Wings of Support)

Sucharu Hasija (iOS implementation)

Rens van Broekhuijsen and other pilots (Testing)

## Disclaimer

This tool has not been approved for operational use.

Pilots should always refer to approved sources.

By using this app you agree to use it at own risk.