



Brief User Guide

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Gulfstream G550 Program

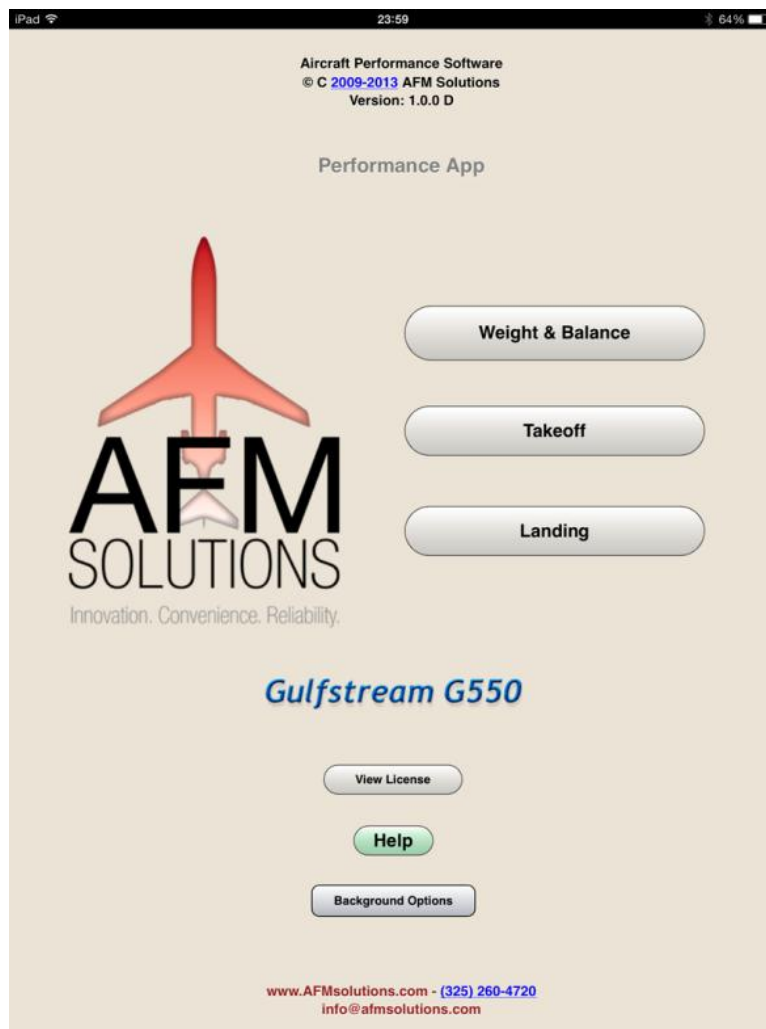
For program installation help please see <http://www.afmsolutions.com/installing.html>

For getting started help please see <http://www.afmsolutions.com/ipadiphone.html>

When starting the app for the first time you'll have to accept the license agreement in order to continue.

When the app is started, it always shows the Main Menu page as illustrated below.

Here, you can tap the Weight & Balance button, Landing button or Takeoff button.



There are several options for the app's background color. Under different lighting conditions certain options may work better than others. The textured background works great in bright daylight, but a darker grey works better in low light situations.

Weight and Balance

Tap the “**Weight & Balance**” button on the main menu to jump to the Weight and Balance form. Then, you can either begin by typing the passengers’ weight values or you can use the quick fill method.

To begin entering numbers tap on a white input box of your choice, for example Pax Seat 1:

View Configuration **Challenger 850**

Fill All Seats Fill All Seats

Pax Seat 1	<input type="text" value="0"/>	<input type="button" value="CLR"/>	
Pax Seat 2	<input type="text" value="170"/>	<input type="button" value="CLR"/>	Baggage 1
Pax Seat 3	<input type="text" value="170"/>	<input type="button" value="CLR"/>	Baggage 2
Pax Seat 4	<input type="text" value="0"/>	<input type="button" value="CLR"/>	Baggage 3
Pax Seat 5	<input type="text" value="170"/>	<input type="button" value="CLR"/>	
Pax Seat 6	<input type="text" value="0"/>	<input type="button" value="CLR"/>	
Pax Seat 7	<input type="text" value="170"/>	<input type="button" value="CLR"/>	

A built-in keypad will appear so you can start typing. To move to the next box press the “**Next**” button:

Proposed Weight ... Use Proposed Weight

Flaps Retraction - Vfr	<input type="text" value="166"/>	<input type="button" value="CLR"/>	Kts
Max. Cont. Thrust - Side	<input type="text" value="97.7"/>	<input type="button" value="CLR"/>	%
Max. Cont. Thrust - Center	<input type="text" value="97.7"/>	<input type="button" value="CLR"/>	%

Runway Condition

Required SID Gradient Obstacle True Height (ft)

Obstacle Obstacle Distance (ft)

Aircraft Configuration

Flaps Anti-Ice Setting

1 2 3 4 5 6 7 8 9 0

- / : ; () \$ & @ Go

#+= undo . , ? ! ' " #+=

ABC

The quick fill method:

1. Select the pre-determined passenger weight from 125 lb to 200 lb.
2. Tap the yellow “**Fill All Seats**” button. Then tap the “**CLR**” button next to any vacant seat.

The screenshot displays the Performance App interface for a Gulfstream G550 aircraft. The interface is divided into several sections:

- Performance App Header:** Includes a "View Configuration" button and the app title "Performance App".
- Seat Configuration:** A list of seats from "Jumpseat" to "Pax Seat 16". Each seat has a weight input field and a "CLR" button. A yellow callout '2' points to the "Fill All Seats" button.
- Fill All Seats With:** A dropdown menu set to "170 lb" with a "CLR" button. A yellow callout '1' points to this section.
- Baggage:** Fields for "Front Baggage" (35) and "Rear Baggage" (375), each with a "CLR" button.
- Fuel Amounts:** A section titled "Fuel Amounts" with a "Clear All Fuel Amounts" button. It includes fields for "Initial (41300 lb Max)" (31680), "Taxi Fuel Used" (200), and "Trip Fuel Used" (21225), each with a "CLR" button.
- Go Button:** A green "Go" button.
- Show Total Weight:** A blue button with a yellow callout '3' pointing to it.
- Weight Calculations:** Fields for "Ramp Weight" (Ramp W), "Takeoff Weight" (TOW), "Landing Weight" (Land W), and "Zero-Fuel Weight" (ZFW).
- Aircraft Model:** "Gulfstream G550" text.
- Copyright:** "© 2009-2013 AFM Solutions".
- Navigation:** "Takeoff", "Landing", and "Main Menu" buttons at the bottom.

3. Press the “**Show Total Weight**” button at any time to the current Ramp Weight, Takeoff Weight, etc.

When finished typing, just press the green "Go" button to see the computed results.

The screenshot shows an iPad interface for aircraft weight and balance calculations. At the top, it displays 'iPad', the time '23:32', and a battery level of '67%'. A green checkmark and the text 'Within Limits' are prominently displayed. Below this, there are four sections of data: ZERO-FUEL, RAMP, TAKEOFF, and LANDING, each listing weight and center of gravity (%MAC) values. A legend at the bottom of the diagram area identifies red, blue, and yellow squares as Takeoff, Landing, and Zero-Fuel CG locations respectively. A text box at the bottom provides instructions on how to print or email the form. The footer includes copyright information for AFM Solutions and navigation buttons for 'Takeoff', 'Landing', and 'Main Menu'.

Back To Input **Within Limits**

ZERO-FUEL:
Weight (lb).....50910
C.G. (%MAC).....37.4
Forw. Limit(%MAC).....34.5
Aft Limit (%MAC).....42.9

RAMP:
Weight (lb).....82590
C.G. (%MAC).....28.3

TAKEOFF:
Weight (lb).....82390
C.G. (%MAC).....28.3

LANDING:
Weight (lb).....61165
C.G. (%MAC).....31.3

Number of Passengers.. 10

---Structural Limits (lb)---
Max. Ramp Weight.... 91400
Max. Takeoff Wgt.... 91000
Max. Landing Wgt.... 75300
Max. Zero-Fuel Wgt.. 54500

W & B Envelope -

Max. Zero-Fuel W.
BOW.

Takeoff Landing Zero-Fuel

All Weight units are in Pounds
All CG units are in % M.A.C.

Email Options

This form can printed with Air Print
Or it can be emailed by selecting
one of these options

Print

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Takeoff Landing Main Menu

The red square represents the Takeoff CG location (often outside the viewing area), the blue square represents the Landing CG location and the yellow square represents the zero-fuel CG location.

The **Ramp Weight**, moment and CG values are also computed, but they are not shown in the diagram. However, if the ramp weight , cg or moment is out of limits a warning message will appear on the screen.

Takeoff

Enter the required airport and weather information. The values will default to zero if left blank.

1. The runway length and the altimeter setting fields cannot be zero.

The altimeter setting can be entered in several ways for your convenience. For example for standard conditions you can type "29.92" or "2992" or you can use a metric value of "1013"

Copy Data From Landing Form

Performance App -
Airport ID: () Runway:()

Weight Not Limited!
Max. TOW Allowed 81500 lb

Pressure Altitude	2000 ft
Deviation From ISA Temp.	-4 °C
HeadWind Component	22 Kts
Effective Runway Length Req.	5277 ft
Actual Accelerate-Stop Distance	4778 ft
Actual Accelerate-Go Distance	4244 ft
V1	130 Kts
VR	133 Kts
V2	139 Kts
En-Route Climb - V _{enr}	182 Kts
Return - V _{ref} (39° Flaps)	145 Kts
V1 _{mcg}	108 Kts
Max. Brake En. - V _{mbe}	195 Kts
Initial 2nd. Seg. Climb Gradient	5.5 %
En-Route Seg. Climb Gradient	4.9 %
Takeoff Thrust - Rated EPR	1.6
Max Cont. Thrust (at Mach 0.3)	1.5
Go-Around Thrust - EPR	1.55

Field Elevation..... 2000 CLR

Runway Heading..... 0 CLR

Runway Length..... 6400 CLR

Clearway Length..... 400 CLR

Stopway Length..... 500 CLR

Runway Slope..... -1 CLR

Altimeter Setting..... 29.92 CLR

Temperature..... 7 CLR

Wind Direction..... 330 CLR

Wind Speed..... 25 CLR

Proposed Weight ... 81500 CLR

Use Proposed Weight Clear All

Airport Database

Required SID Gradient

Obstacle

None

Obstacle Height From Brake Release (ft) 360 CLR

Obstacle Distance From Brake Release (ft) 13800 CLR

Using Standard Flight Path

Runway Condition
Dry Runway

View Details

Print

Aircraft Configuration

Flaps Setting: 10° Flaps, 20° Flaps

Anti-Ice Setting: OFF, Cowl Only, Cowl & Wing

Anti-Skid: ON, OFF

ECS Setting: OFF, ON

Ground Spoilers: AUTO, Manual

Landing © 2009-2013 AFM Solutions Main Menu

2. If the "Use Proposed Weight" box is checked, the program will use the weight found in the "Proposed Weight" box. If left unchecked, the program will find the maximum allowable takeoff weight for the given conditions.

3. If there are no obstacles to clear and no required SID gradient, press the "None" button. If there is an obstacle, enter the obstacle height above the brake release point in feet. Then enter the obstacle's distance from the brake release point.

4. Press the “**View Details**” button to see the details of all the weight limitations encountered and the flight path details



If a computed weight limit value is less than the MTOW then it is shown in red. In this case the maximum takeoff weight limited by obstacle is 84543 lb. Since in this example the proposed takeoff weight is 81500 lb, takeoff is not limited.

Note that the maximum continuous thrust is always computed at the pressure altitude and temperature of the level-off height. The calculated value of the level-off pressure altitude is always adjusted for any deviation from ISA temperature.

When it is required to clear an obstacle, the program will always find the highest possible weight that will allow the **net flight path** to clear the obstacle by a **minimum of 35 feet**.

The second segment climb gradient is always computed. The **1500 ft level-off height** is adjusted for temperature deviations and converted to a **pressure altitude**. When it is necessary to go beyond the 2nd segment, the program calculates:

- the height reached at the end of the 2nd segment
- the height reached at the end of the final segment.
- It also calculates the horizontal distance travelled during each segment
- the horizontal acceleration distance required during the transition segment.

The main values are then displayed in the details box. To close this box, just tap anywhere inside the box.

The **Reference Zero** point is a point on the runway at the end of the actual accelerate-stop distance.

Printing Takeoff Results

Click on the “Print” button if you want to print or email the results of your takeoff calculations. The following form will appear

TAKEOFF PERFORMANCE - Weight Not Limited! Date: 12/06/2013

Max Allowable Takeoff Weight 82390 lb

Pressure Altitude 2000 ft
Deviation From ISA Temp. -4 deg C
Headwind Component 22 Kts

Effective Runway Length Required 5420 ft
Actual Accelerate-Stop Distance 4886 ft
Actual Accelerate-Go Distance 4356 ft

V1 131 Kts
VR 134 Kts
V2 140 Kts
En-Route Climb - Venr 183 Kts
Return - Vref 146 Kts
Vlmcg 108 Kts
Vmbe 194 Kts

Initial 2nd Segment Gradient 5.4 %
En-Route Seg. Climb Gradient 4.8 %

Takeoff Thrust - Rated EPR 1.6
Max Cont. Thrust (at Mach 0.3)..... 1.5
Go-Around Thrust - EPR 1.55

AIRPORT AND WEATHER INFORMATION:

Field Elevation 2000 ft
Runway Length 6400 ft
Clearway Length 400 ft
Stopway Length 500 ft
Runway Slope -1 %
Altimeter Setting 29.92 in-Hg
Temperature 7 deg C
Runway Condition Dry

AIRCRAFT CONFIGURATION:

Flaps: 20 deg.
Anti-Ice: Cowl Only
Anti-Skid: On
ECS: Off
Ground Spoilers: Auto

Print This Page

email This Form

Return To Takeoff

Press the "Print This Page" button and your AirPrint user dialog will appear. Air Print is now a standard feature on iPads running iOS 7. Just select your wireless printer and print.



Landing

If the aircraft has to make an emergency landing immediately after takeoff, you can quickly transfer all the airport and weather information from the takeoff form into the landing form by pressing the “**Copy Data From Takeoff Form**” button near the top of the form.

Copy Data From Takeoff Form

Performance App -
Airport ID: () Runway:()

Airport & Weather Information

Field Elevation..... 2000 CLR
Runway Heading..... 330 CLR
Runway Length..... 8200 CLR
Runway Slope..... 0 CLR
Altimeter Setting..... 29.92 CLR
Temperature..... -2 CLR
Wind Direction..... 200 CLR
Wind Speed..... 15 CLR
Weight 72350 CLR

Airport Database Clear All

Runway Condition

Slush

Contaminant Depth (in.)
0.3 CLR Go

Aircraft Configuration

Anti-Ice Setting: OFF ON
Anti-Skid: ON OFF
Spoilers: AUTO Manual
Cowl & Wing

Performance App

✓ **Landing Weight 72350 lb**

LANDING DISTANCE (Dry)	3355 ft
FACTORED LANDING DIST. (60%)	5592 ft
Pressure Altitude	2000 ft
TailWind Component	10 Kts

Weight Limited By:

By Land. Distance	75300 lb
By Approach Climb Req.	91000 lb
By Landing Climb Req.	91000 lb
By Tire Speed - Flaps Up	91000 lb
By Brake Energy - Flaps Up	89309 lb
Landing Speed - Vref	134 Kts

Other Landing Data:

Approach Climb Speed	139 Kts
All Eng. Landing Climb Speed	134 Kts
Flaps 20 - Appr. Climb Gradient	7 %
Flaps 39 - Landing Climb Gradient	14 %
Rated EPR - Go-Around	1.53

Landing Distance - Contaminated Rwy.

LANDING DISTANCE (Cntm.)	7564 ft
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Vref Increment:
Vref + 5 Kts

Print / email

Print This Page As Is

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Takeoff Main Menu

If the “**Weight**” box is left blank, the program will use the structural maximum landing weight allowed. If any of the Landing Distance results (dry, wet or contaminated) are out of range there will be a warning message shown in red. In the example above with slush covered runway, the landing field length of 7564 feet is less than the runway length of 8200 ft, so consequently we see a green checkmark next to the landing weight.

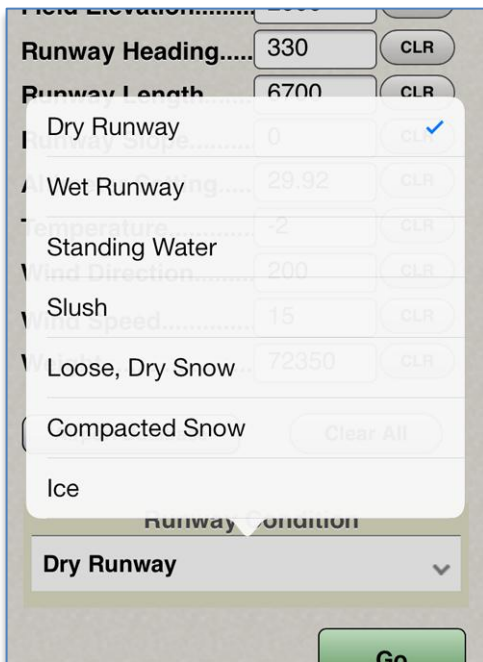
You can also select the Vref increment used so that the program can apply the proper correction for Landing Distance. The available options are

- Vref
- Vref + 5 Kts
- Vref + 10 Kts



Using the Contaminated-Runways Data

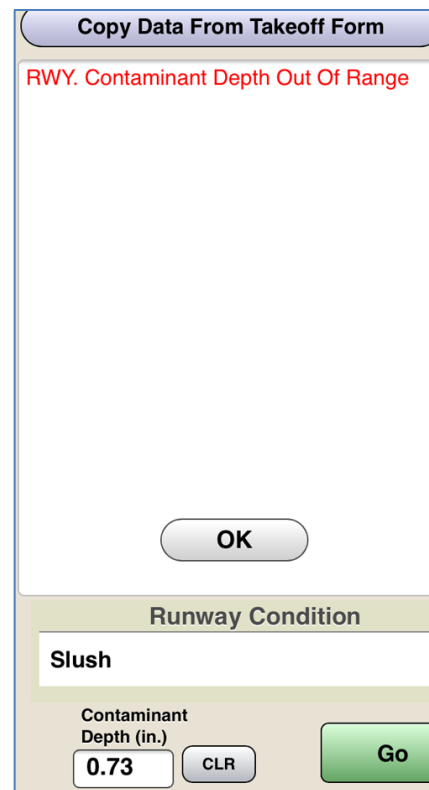
Tap on the “**Runway Condition**” box in the Takeoff form to see the different types of contaminants available



When wet or contaminated runway is selected, the program will always display the **dry-runway** values first.

It will also show the **wet/contaminated** runway landing distance near the bottom of the form.

For wet runways the last line shows the “Wet Distance – 1.92 Factor”. That is the dry-runway landing distance divided by 0.6 and then multiplied by 1.15.



The user is required to enter the contaminant depth in inches, except for Ice and Compact Snow conditions. This program automatically converts this value to the equivalent **Water Depth** (in mm) which is ultimately used in the charts.

In this example the program is alerting the user to the fact that slush depth of 0.73 inches is greater than the maximum allowed 0.72 inches.

Aircraft Configuration (Weight and Balance)

To view or modify the aircraft configuration, press the “**View Configuration**” button near the top of the weight and balance form. The W&B configuration form will show.

The screenshot displays the 'W&B Config.' form. At the top, there are 'Return' and 'Next Page' buttons. The form is divided into several sections:

- Seat Configuration:** A dropdown menu for 'Total No. of Seat Stations' is set to 15 (indicated by a red '1' and a yellow arrow). Below it, a list of 15 seats is shown, each with a text input field (e.g., 'Pax Seat 1') and a 'CLR' button. A red '2' and a yellow arrow point to the first seat's input field.
- Baggage Configuration:** A dropdown menu for 'Total No. of Bag. Stations' is set to 3. Below it, a section titled 'Enter Bag. Station Names:' contains five rows, each with a text input field (e.g., 'Baggage 1') and a 'CLR' button. A 'Clear All' button is located below this section.
- Weight and Balance:** Two input fields are present: 'B.O.W. (lb)' with the value 33,800 and 'B.O.W.Arm (In)' with the value 521. Each has a 'CLR' button.
- Buttons:** A red 'Save' button is located below the weight and balance fields. A 'Clear All' button is also present at the bottom of the seat list.
- Version:** 'Ver. 1.0.0' is displayed at the bottom.
- Copyright:** '© 2009-2013 AFM Solutions' is displayed at the bottom right.

To return back to the weight & balance form, press the blue “**Return**” button. To move to the second page press the blue “**Next Page**” button.

Here, you can change the number of seats present in your aircraft, the number of baggage areas present, B.O.W. weight etc.

1. This box lets you select how many passenger seats your aircraft uses.
2. You can rename the seats or baggage areas if needed.

For example if the first seat is a flight attendant seat, just tap the “Pax Seat 1” box and change it to “Jump Seat” or “Flight Attendant”. After you have made all the necessary changes, press the red “Save” button. Then return to the program.

Return Aircraft Configuration Page 1 **Next Page**

17 - Total No. of Seat Stations
 2 - Total No. of Bag. Stations

Enter Bag. Station Names:

Enter Seat Station Names:	Bag. 1	Front Baggage	CLR
Seat 1	Jumpseat		CLR
Seat 2	Pax Seat 1		CLR
Seat 3	Pax Seat 2		CLR
Seat 4	Pax Seat 3		CLR
Seat 5	Pax Seat 4		CLR
Seat 6	Pax Seat 5		CLR
Seat 7	Pax Seat 6		CLR
Seat 8	Pax Seat 7		CLR
Seat 9	Pax Seat 8		CLR
Seat 10	Pax Seat 9		CLR
Seat 11	Pax Seat 10		CLR

Clear All

B.O.W. (lb) 48800 CLR
 B.O.W.Arm (In) 593.5 CLR

Save

To enter or change C.G. arms locations of the seats and baggage/cargo areas, go to the second page. Make any necessary changes and then press the “Save” button to save your new values or press the “Save & Exit” button to save the new values and return to the weight and balance input form.

Previous Aircraft Configuration Page 2 **Save & Exit**

Enter Arms in Inches:

Seat 1	147	CLR	Enter Arms in Inches:	Baggage Station 1	221.6	CLR
Seat 2	287.5	CLR		Baggage Station 2	720	CLR
Seat 3	287.5	CLR		Baggage Station 3	0	CLR
Seat 4	347.5	CLR		Baggage Station 4	0	CLR
Seat 5	347.5	CLR		Baggage Station 5	0	CLR
Seat 6	391	CLR				CLR
Seat 7	391	CLR				CLR
Seat 8	444	CLR				CLR
Seat 9	444	CLR				CLR
Seat 10	488.5	CLR				CLR
Seat 11	488.5	CLR				CLR

Clear All

Save

If your aircraft has more than 18 seats please contact AFM Solutions so adjustments can be made to the program.

