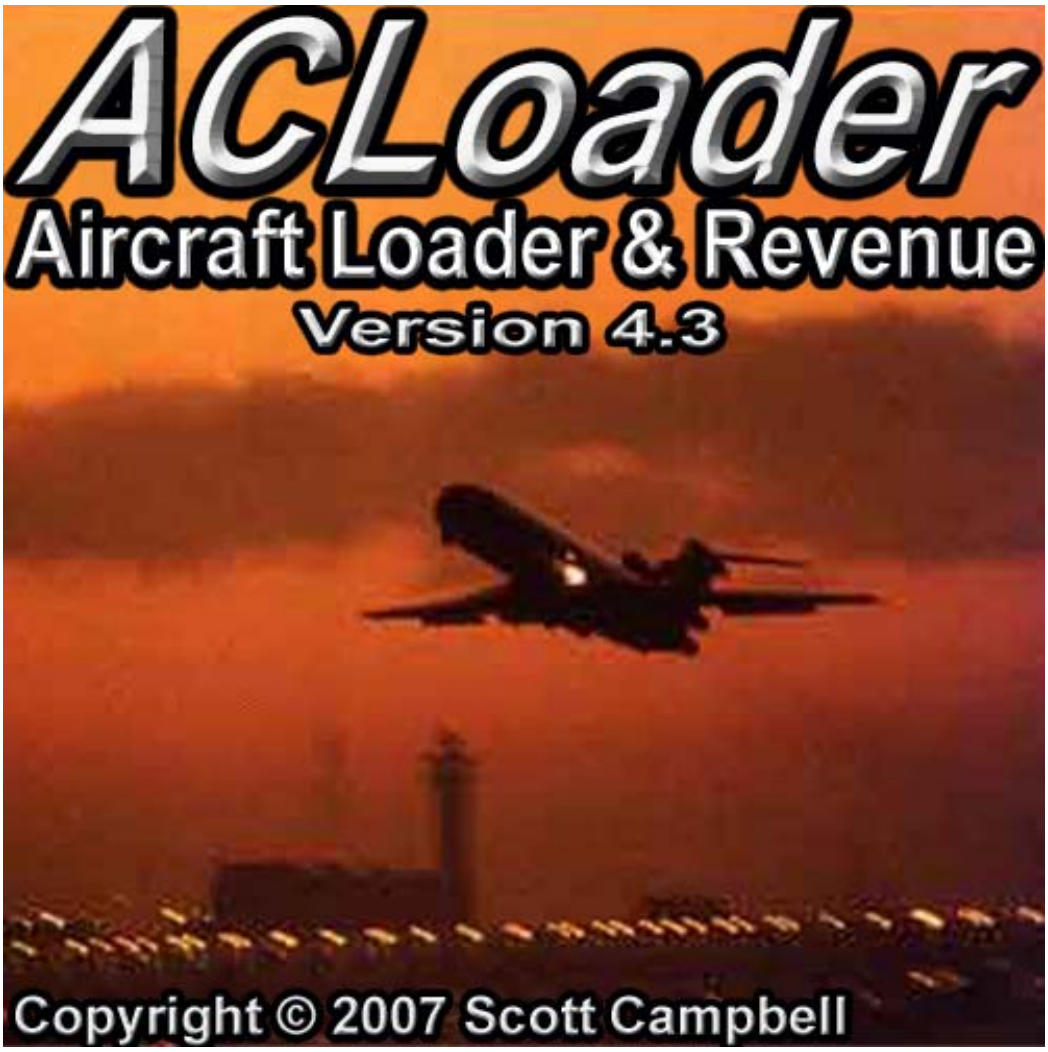
ACLoader
Aircraft Loader & Revenue
Version 4.3
Copyright © 2007 Scott Campbell

ACLoader V4.3

Aircraft Loader & Revenue
For Microsoft Flight Simulator

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Table Of Contents

Table of Tables

Table of Figures

Introduction

***ACLoader:* Aircraft Loader & Revenue** is a global-use program to load and balance a FS2002, FS2004-ACOF (FS9) and FSX aircraft, and generate a financial report for a flight even if there is no Flight Simulator. Whether you fly a Piper Cub or a 747-400, ACLoader can correctly load the aircraft with passengers, baggage and cargo. The program is completely configurable so you can define any type of aircraft layout. ACLoader also gives a visual display of how the loadout looks, and how the aircraft is balanced. This means any corrections or changes may be made before altering the Flight Sim aircraft. As well as generating a load automatically, manual entries may be made to set a load as desired. Defining Aircraft Data and Route Data are all done within the program so it's a breeze to make new files. Share your route data information with your VA and friends by exporting and importing a record. Aircraft data are saved in individual files so those may be shared as well. Now everyone's on the same page. It's a very complicated program doing a very simple thing.

Now GA and Airline Operations Are *As Real As It Gets*

Installing ACLoader

To install ACLoader 4.3 simply unzip the contents of the ACLoaderV43 zip file to whatever location you wish. This will create a directory named "**ACLoader 4.3**", with 2 subdirectories, "**Data Files**" and "**Manual**".

The **Data Files** directory contains all the aircraft data files, seating maps, and route data records file, named **ACLoaderRoute.dat**. When you add, delete, or change route information, this is the file that gets changed.

There is one file you need to move: **ACLoader 4.3\Manual\Denver Intl to San Francisco Intl.PLN**. This is the flight plan used in the tutorial sections for loading aircraft with a plan. Copy this file either to "**FS2002\flights\myflts**", "**My Documents\Flight Simulator Files**" for FS9/FS2004 or "**My Documents\Flight Simulator X Files**" for FSX.
If you got the program only, you're not reading this manual. Shame on you!

You can run ACLoader either from the ACLoader 4.3 directory that was created when you unzipped, or create a shortcut on the taskbar, in the start menu, or on the desktop (my personal fav)..

I have been asked why I don't have an installation utility. The reason is personal. I hate all those programs that clog up the registry with needless stuff. ACLoader is a stand-alone program. It doesn't require added libraries or DLL's or anything that adds more clutter to the system. It's easy to install, move, run, and delete (but you'll never do that).

Using Route and Aircraft Files From Older Versions

If you have used previous versions of ACLoader and added to the route records, you can copy the route data table file (**Data Files\ACLoaderRoute.dat**) over to **ACLoader 4.3\Data Files** as nothing has changed in that file. The Aircraft Data Files, however, have substantially more information added from version 3, and some new information added since version 4.0. The aircraft fuel use specs and some placement of cockpits and other information has also been changed in this version to be more accurate. Since version 4.1, added are cargo hold placement and landing fee scalar. If you are replacing version 4.1, you really don't need to do anything other than copy ACLoader.exe to your execution directory to replace version 4.1.

If you are replacing version 3 and 4.0, you can still use any Aircraft Data Files you made, but you will need to edit them to add the new information. The main additions are the information pertaining to which galleys exist, the layout image to use, and wing and engine placement. Wing and engine placement are for the correct display of items on the layout image. GA aircraft have been totally changed. The number of rows and seats and other information has been added, as well as the addition of a food cooler. None of this should pose a problem though. Just take a couple minutes to look over the aircraft specs and information on the Seating/Extra Aircraft Info/Edit tab (page 27) for each aircraft

Just copy the Aircraft Data Files you made over to the ACLoader 4.1\Data Files directory. I highly recommend you really want to replace any files that already exist since a lot of editing has gone into them. If you do rename the default files, the aircraft names in those files may be duplicates of the files you are copying, so be aware of that, too.

Credits

Concept, programming, design, layout images, generally nice guy: **Scott Campbell**
Aircraft Data Files and seating maps: **Scott Campbell, Alex Synnott, Daniel Hill. DC3-Airways, Michael Verlin (HJG), Ron Ackerly, Torben Hadler, Wilson Hines**
Route planning and fuel/distance formula and really nice guy: **Ted Wright**

Using ACLoader – Getting Started

The following step-by-step tutorials will take you through everything you need to know about all aspects of ACLoader, from the very beginning to loading and balancing and writing files; to creating and editing Aircraft Data Files; and creating, importing and exporting Route Records. There's a lot to know.

Following the basic-use tutorials are the details of each form and field, which are referenced in their respective sections. You may wish to look at each detailed section before you continue with the tutorial.

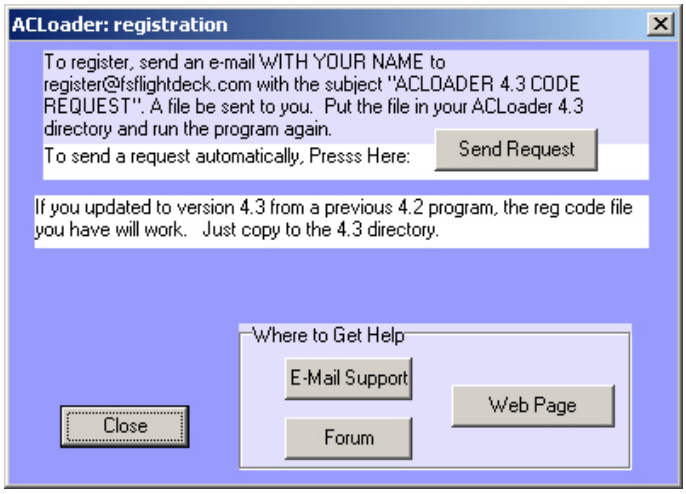


Figure 1: Registration Instructions Form

Registration Instruction Form

The very first item you will see is the registration form. I know you already paid for the program, but this helps cut down on piracy. All you need to do is read and follow the instructions. Send your NAME and e-mail address (which is obviously what you entered into the From: field to mail me) and e-mail it to **register@fsflightdeck.com** with the subject line of **ACLOADER 4.3 CODE REQUEST**. ***You must use the same name and e-mail address as when you purchased the program or you may not receive a code. It is also possible I already sent you a code file (ACLoaderCode.zip). Just unzip it put ACLoader reg code.txt in your ACLoader 4.3 directory.*** Or you can simply click on "***Send Request***" and ACLoader will open your e-mail program with To: and Subject: and text fields already entered. Either way, if you need help, you can click on "***E-Mail Support***", "***Forum" or "Web Page"*** to go to the ACLoader support forum. REMEMBER! Copy **ACLoader reg code.txt** to somewhere you won't lose it (like a floppy)! If you need to reformat, put this file back into the **ACLoader 4.3** directory, and there will be no need to get a code again.

Settings Form – First Look

After installing the **ACLoader reg code.txt** file, you will see the Settings Form (page 18). This is where you set the path of your Flight Simulator and plans directories, choose your text editor (to edit/print the load reports), choose if you want to write reports only, use Metric instead of US Imperial weight and distance measure, and set default values for weights and costs, as well as default maximum random loads

.

By default, ACLoader will first check which FS versions you have installed. It will set your FS Path to the latest FS directory, and the **Plans Path** to the default plans. ACLoader will search for your FSX, FS2004-ACOF then FS2002 directory. If it finds those, it will set that path and plans directory. You can change to any directory for either, including across a network by using the browse buttons for FS and plans directories. If you have multiple FS versions, just select which FS you want by clicking on the version shown on the top.

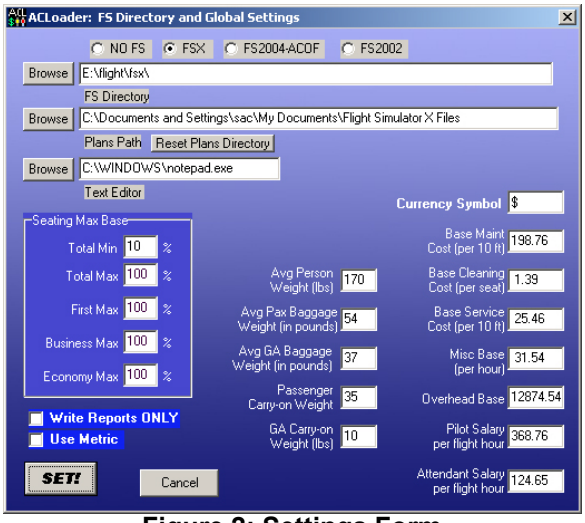


Figure 2: Settings Form

Although you can browse across the network to your FS directory, if you are using FSX or FS9 on WinXP or Vista you may not be able to browse to your plans directory on the network. MS puts the plans directory into "**My Documents**" inside the **"Documents and Settings/(login)**" folder, which will have special protection if you are using ICF (Internet Connection Firewall). Why they insist on doing this is beyond me.

If you close this form before you click "***Set!***", you will have to re-enter what you changed the next time you run ACLoader and set this info again. If you have previously saved and close this form without clicking "***Set!***" you will lose any new information you enter here.

There is a full description of the items on this form in the Settings Form – The Details section on page 18. For now, just click "***Set!***"

If You Get An Error After Saving Settings or Starting ACLoader

After clicking "***SET!***", or after starting ACLoader, you may get an error like the one to the right:

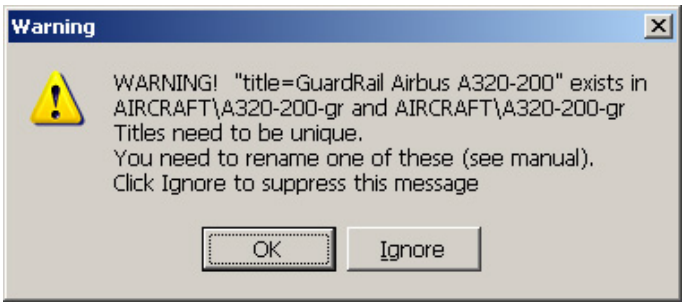


Figure 3: Multiple Identical Aircraft Definitions Warning

This happens when there is one or more definitions of the same aircraft in the same or other files. Flight Simulator requires you have unique title= lines in each [fltsim.x] section and in each file. In this example, "GuardRail Airbus A320-200" is defined in the same file, but in a different [fltsim.x] section.

Here are the definitions in the aircraft.cfg file in question:

```
[fltsim.0]
title=GuardRail Airbus A320-200
sim=A320200
model=
panel=
sound=
texture=
kb_checklists=
kb_reference=
atc_id=N3956GR
atc_airline=Garuda
atc_flight_number=
ui_manufacturer=GuardRail
ui_type=Airbus A320-200
ui_variation=GuardRail New
description=The Airbus A320\nAircraft design by  António Sequeira.\nTextures Copyright Scott Campbell\n\n

[fltsim.1]
title=GuardRail Airbus A320-200
sim=A320200
model=
panel=
sound=
texture=GIA
atc_id=N827GA
atc_airline=Garuda
atc_flight_number=
ui_manufacturer=Gateway Island Airways
ui_type=Airbus A320-200
ui_variation=GIA
description=The Airbus A320\nAircraft design by  António Sequeira.\nTextures Copyright Scott Campbell\n\n
```

See the problem? "**title=GuardRail Airbus A320-200**" is defined in both [fltsim.0] and [fltsim.1]. One of these has to be fixed. Since the second definition really should be Gateway Island Airways, that title= will have to be renamed, making the line "**title=Gateway Island Airways Airbus A320-200**". Now both definitions are unique and we can rerun ACLoader and not get this error. You *must* restart ACLoader if you fix a file while ACLoader is running.

As a note on the subject, when you fix this problem you may see more aircraft show up in Flight Simulator. You may have more aircraft than you knew about.

Finally, what if there's nothing below a title= line or other definitions in the same file are just identical (same textures, panels, sound, etc). Then you should delete those. Delete from the [fltsim.x] line to the next section beginning with a bracket. ***If you aren't adept at editing aircraft.ffg files, DON'T***. Just rename the title= line to something unique.

Main Form – First Look

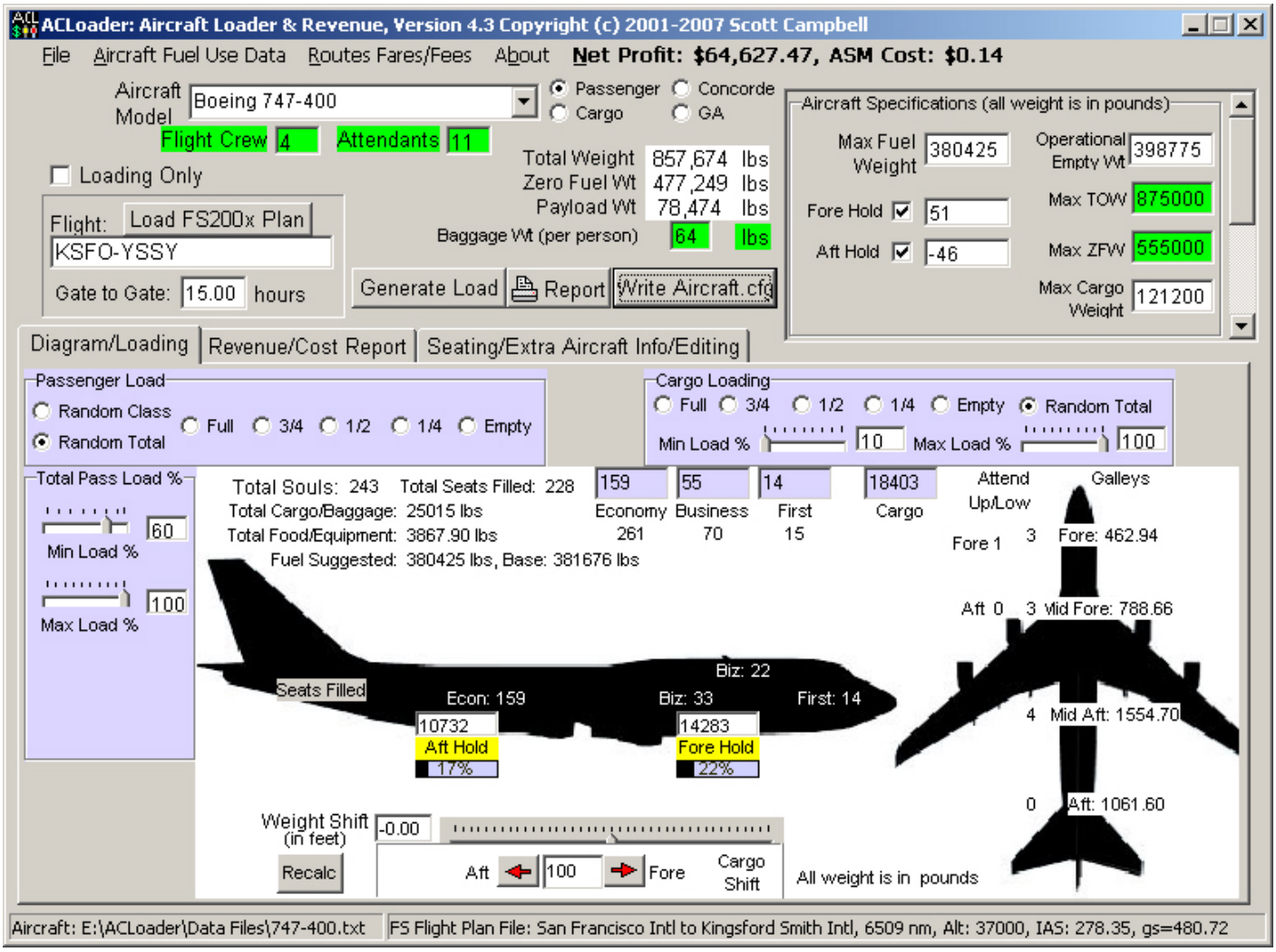


Figure 4: Main Form – First Look

After closing the Settings Form, ACLoader will display the Main Form. This is the form you will see from now on when you run ACLoader. This is where all the work is done.
The basic sections of the form are

- Aircraft Model pulldown, Plan/Fuel Load, and weights section (also called the General Section)
- Layout Aircraft Specifications and Seating section
- Aircraft Loading and Layout Diagram tab
- Revenue/Cost Report tab
- Seating Map/Extra Aircraft Info/Editing tab

All these sections and tabs are described in detail in the Main Form – The Details section on page 20.
The above picture shows what the Main Form looks like after choosing a flight and loading.

For now the following sections describe how to quickly load and modify the different types of aircraft: **Passenger** (commercial aircraft where people pay to get from one place to another), **Cargo**, **Concorde** (like Passenger, but has special processing), and **GA** (General Aviation). As of yet, ACLoader is still not really set up for Combi and Corporate/Custom aircraft.

Using ACLoader Step By Step – Passenger/Cargo Aircraft

The most common use of ACLoader is to load airliners. Most airliners are passenger aircraft, but a lot are also cargo carriers. This tutorial describes the loading and modifications for passenger and cargo jetliners, but can also apply to smaller prop and turbo-prop aircraft that aren't designated as "GA" (general aviation) aircraft. GA aircraft loading is described later. Some items described in this section also apply to GA aircraft loading.

Selecting an Aircraft

To select an aircraft you want to load, either passenger or cargo or Concorde or GA, click the arrow on the "**Aircraft Model**" list pulldown, then scroll to the aircraft you want to use. We'll select the 737-400.

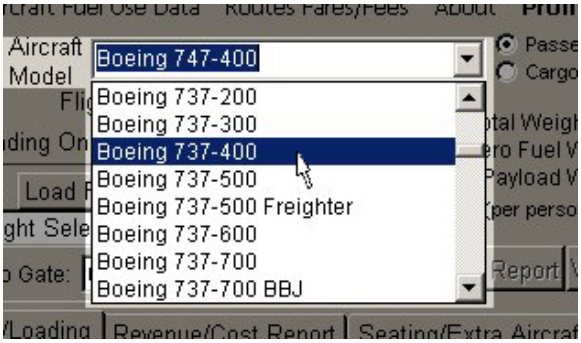


Figure 5: Selecting an Aircraft

ACLoader will remember the last aircraft you selected. When you next run ACLoader, that is the aircraft that will be displayed. This makes it easier to load an aircraft you frequently fly.

Let's begin using ACLoader by doing a quick load and learning a little about the program. We'll begin by loading with the "**Load FS Plan**" option.

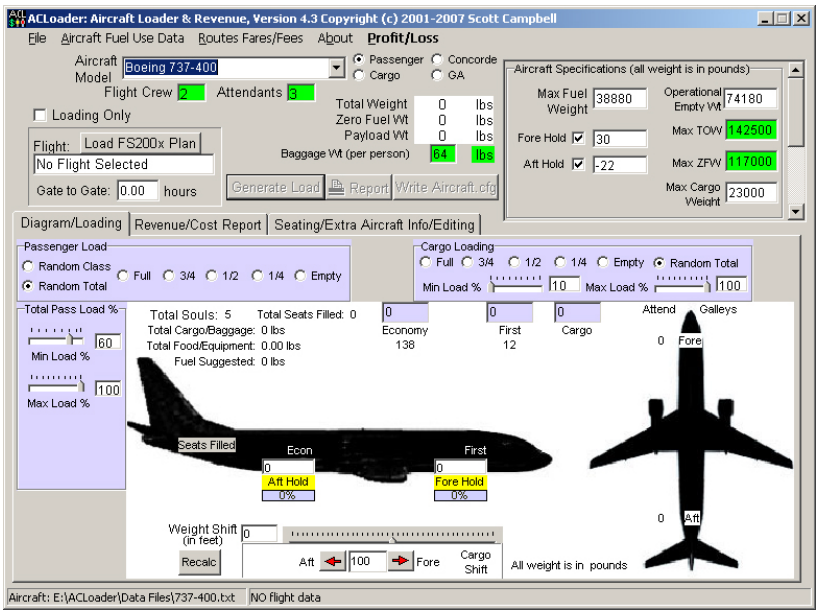


Figure 6: Main Form after Selecting 737-400

Using An FS Plan to Load the Aircraft

Before you can do any loading you need to know where you are going, in which direction you are flying, and how far it is. This goes for loading an aircraft from a plan file or when using Loading Only. You have only so much fuel, and so much weight you can load.

We'll use a plan file provided with ACLoader, and following is a section on using "***Loading Only***". Almost everything below is the same for both methods.

The file is named "**Denver Intl to San Francisco.PLN**" and should have been placed into your FS plans directory as described in "Installing ACLoader" (page 1). Click on "***Load FS200x Plan***" and select that plan.

Figure 8: Load Plan Button

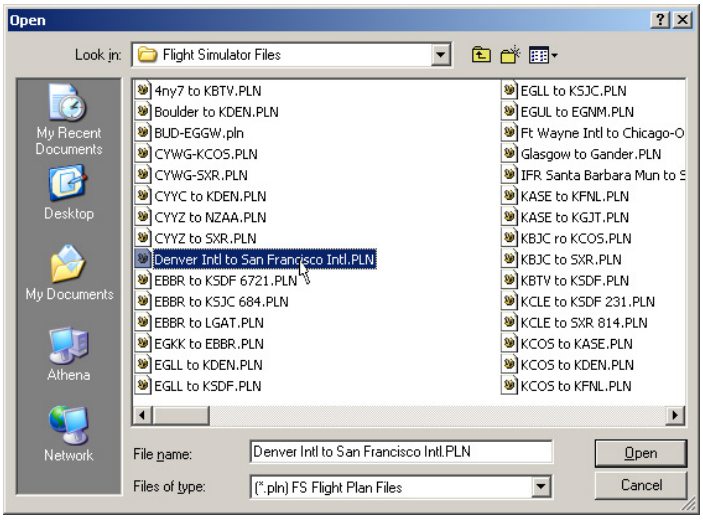


Figure 7: Open Dialog

You may encounter the following warning if you don't have a **Route Record** defined for the planed departure and arrival airports:

What do you do? Define a Route Record as discussed in the Route Record Creation and Editing section (page 30), or select a route that is close to what you want from the Route Fares pulldown, as suggested.

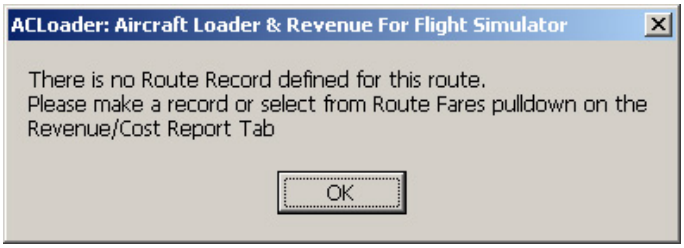


Figure 9: No Route Record Warning

With the plan loaded, this is what you see on the Main Form and Revenue/Cost Report Tab.

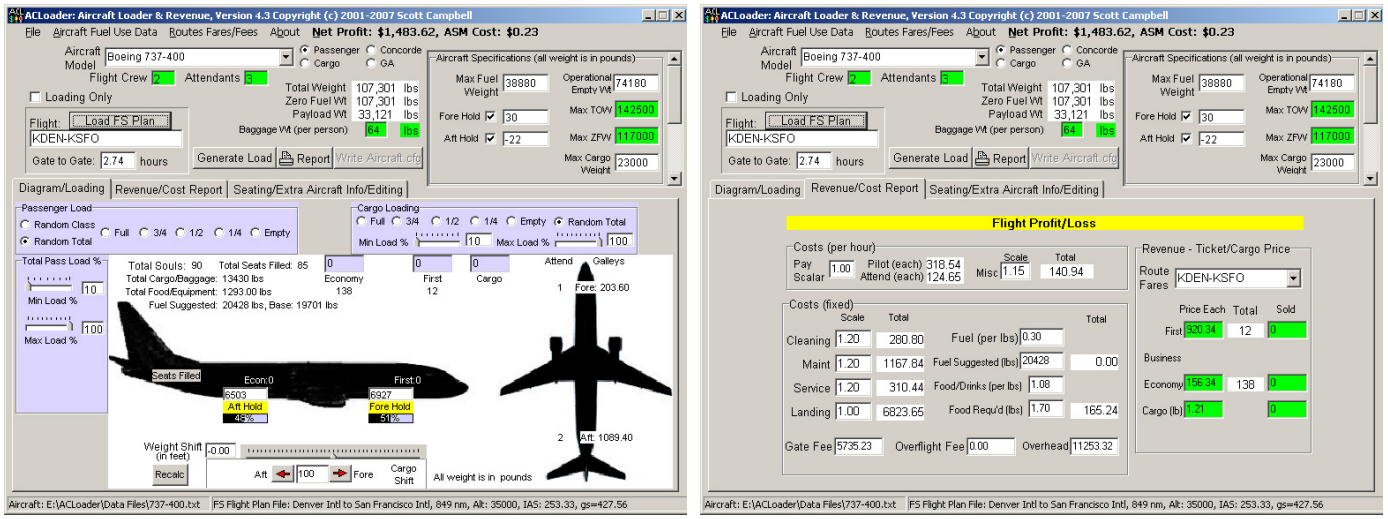


Figure 10: Main Form and Revenue/Cost Report Tab After Loading Plan

The plan may be loaded, but the plane isn't loaded yet. The one thing that has changed is the "*Generate Load*" button has become enabled. Click it. Each load is different because you are loading random numbers of passengers and cargo each time you click the button. You can click "***Generate Load***" as many times as you wish. Note that when you first click it, the "***Report***" and "***Write Aircraft.cfg***" buttons are enabled. We'll get to those in a minute.

Manually Changing the Load

After generating a load, you can alter the load manually. Let's fully load this aircraft. To do that, double-click on the Economy Class passenger number - in this case, "80". Change that to 138.

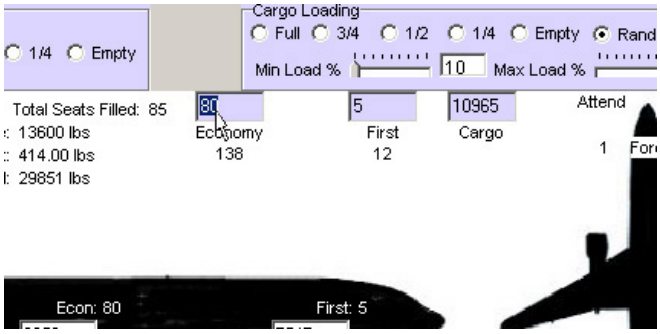


Figure 11: Select Passenger Class Value to Change

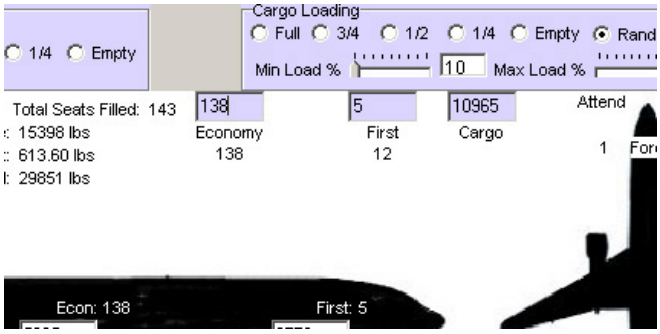


Figure 12: Change to Load Value as Desired

Enter 12 into First, and 23000 into Cargo. You now have a fully loaded aircraft. The form now looks like the following.

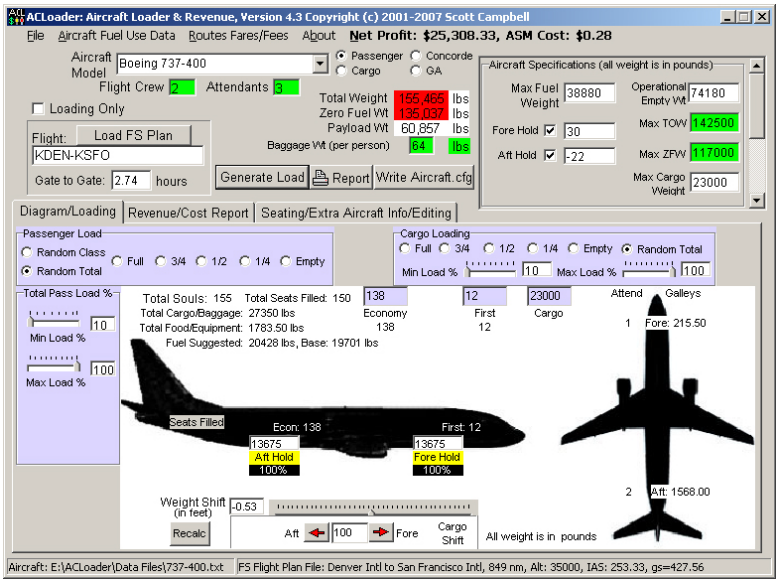


Figure 14: 737-400 Fully Loaded

But wait, there's a problem (there are actually a couple problems). If you look at the top of the form on the weights section, the Total Weight and Zero Weight amounts are in red. What's up with that? Simple, you're overweight. Well, not you personally, it's the aircraft that's overweight. Now what?

When the Aircraft Is Overweight

ACLoader alerts you when you have overloaded your aircraft if you try to save it. The Total Weight and/or the Zero Fuel Weight values will turn red when you violate the maxima (see below). What happens if you try to modify an aircraft.cfg when you are overweight? Well, let's find out. Click "***Write Aircraft.cfg***"

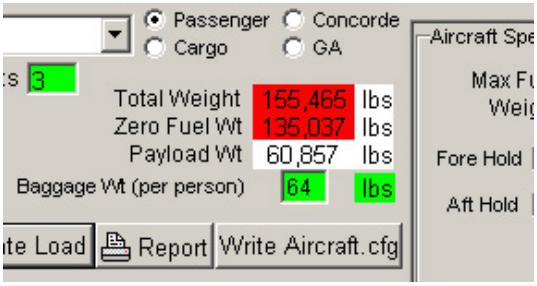


Figure 13: 737-400 Overweight

Figure 15: Overweight Warning Choices

Oops. ACLoader won't let us. Now what? Now we read the options and select one. We can remove cargo since there's plenty to bring us back down to our Max Zero Fuel Weight (MZFW) and Max Total Weight (MTOW). So click "***Remove Cargo***". ACLoader automatically removes the extra cargo and displays the result as shown to the right.

Figure 16: Cargo Removal

You can also remove people if you are overweight. In the airline industry, this is called overbooking, or Committing Suicide. Every person you have to bump from a flight is another passenger riding on your competition in the future. If you click "***Remove People***" you get the conformation below.

Finally, you can also remove fuel. When you loaded the plan, ACLoader calculated the necessary amount of fuel for your aircraft for the flight, taxiing, and a 45-minute reserve. Changing the suggested fuel load is not advised, but you get a dialogue to do it.

If you were writing the aircraft.cfg file, after reducing your weight, ACLoader will return you to the Main Form (page 20) where you will have to click "***Write Aircraft.cfg***" again. This is done so you can further modify the load if you want, to correct what you removed. If you clicked "***Report***", then after reducing the load ACLoader will display the report without the need to click it again.

Figure 18: People Removal

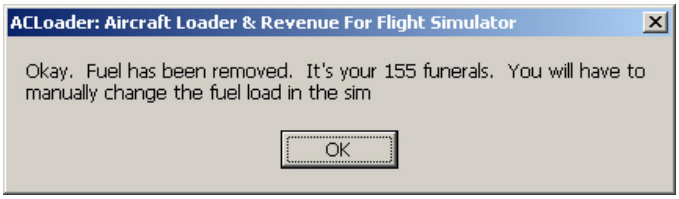


Figure 17: Fuel Removal and Confirmation

Final Note About Manually Loading the Aircraft

Pay attention to the Weight Shift section below the aircraft layout profile image. Remember when we fully loaded the 737? Do it again. Reset the Cargo to 23000. Where's the problem?

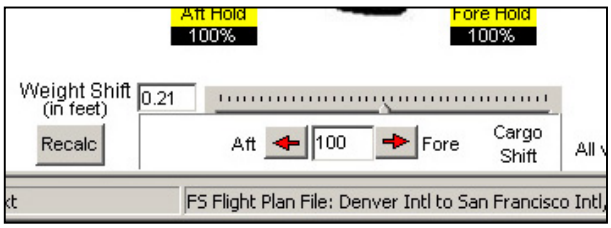


Figure 19: Weight Shift Display

You're not just overweight, you're out of balance. Even though this 0.21 CoG shift is within an acceptable range for a 737-400 (anything under 0.41 or over -0.41 is okay), you might want to consider removing cargo to keep the CoG at 0.0. This is a bad aircraft for this example since it holds a lot of weight without going too far over the CoG. You can try loading a 747-400 until the Weight Shift numbers are huge, and still not be overweight.

Viewing and Printing the Report Files

To view the report files, click the "***Report***" button after generating or modifying a load. The report files are the files you will see written to the "**(aircraft)_notes.txt"** file (FS2000/FS2002), or "**(aircraft)_ref.htm"** (FS9) file, and the "**ACLOADER REPORT.txt**" file found in the aircraft's directory under your FS path.

The short file (_notes.txt or _ref.htm) is what is displayed on the kneeboard if you click the Notes (FS2002), or Reference (FS9) button when the sim is running. The **ACLOADER REPORT.txt** file is the longer, more detailed report with load layout and financial report. You can print either from the Report Form (right) using your own text editor. You set the text editor you want to use on the Settings Form (page 18). When you click "***Edit/Print!.***". The report you are looking at is loaded into your text editor where you can edit and print the report.

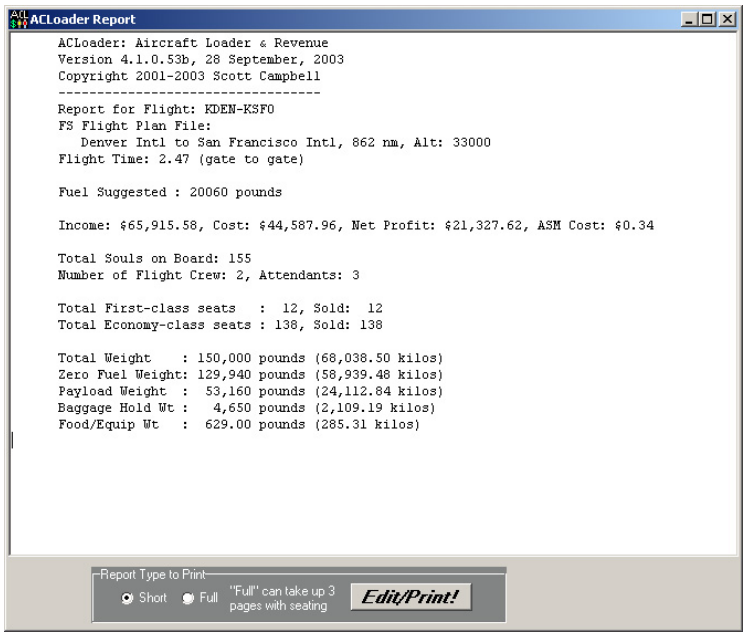


Figure 20: Report File Form

Write Aircraft.cfg and Report Files

If you aren't overweight, clicking the "***Write Aircraft.cfg***" button opens the Save Aircraft dialog form. Select the aircraft you want to save the load to. From now on this is called modifying the aircraft. Select the aircraft you want to modify.

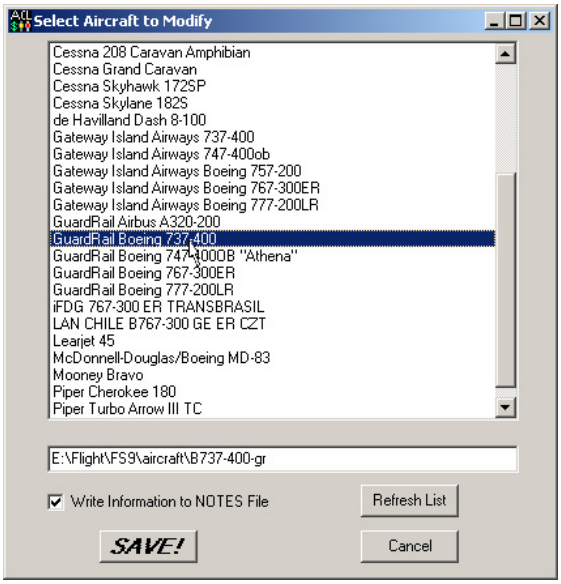


Figure 21: Modify (Save) Aircraft.cfg Dialog

You can double-click the aircraft name, or click on it, then click "***SAVE!***" If you make any changes in ACLoader after modifying the aircraft, when you click "***Write Aircraft.cfg***" again, this aircraft is already selected. The lower text box shows the exact path to the aircraft you have selected.

If you want ACLoader to write the notes (FS2000/FS2002) or htm (FS9) kneeboard file, check "***Write Information to NOTES file***". This is checked by default. There is more detail in the ACLoader Files section (page 15).

The aircraft.cfg file is modified with the new weight, balance, and load data.

If you are using "***Write Reports ONLY***" (Settings Form – page 18), then ACLoader only writes the "**ACLOADER REPORT.txt**" file to the specific aircraft directory selected in the list. If there is no path set to an FS directory, ACLoader writes the report file to that location.

Backing Up and Restoring the Aircraft.cfg File

If this is the first modification of this aircraft, ACLoader will create a back-up file named "**aircraftcfg.bak**". This file is untouched by ACLoader again after the first write. The back-up file can be restored from the "***File/Restore Aircraft from Backup***" Main Menu item.

No matter how many times you've modified the aircraft, you can restore the aircraft.cfg to the first dtate it was in before running ACLoader on it the first time. When you click "***Restore Aircraft from Backup***" the Save Aircraft dialog form will open. Double-click or click and save as if you are modifying the aircraft. If you modified the aircraft and are still running ACLoader, that aircraft is still selected.

Warning! If you've modified anything in the aircraft.cfg file manually, restoring from the back-up will cause you to lose all your changes. Be absolutely certain you want to restore the aircraft.cfg from the back-up before you do it.

Loading Cargo Aircraft

There are a few differences between loading a cargo plane and a passenger plane. The main difference is that there are no passenger seats. That's okay since cargo is where the real profit is for an airline. Cargo planes can have forward galleys and even attendants to serve the crew if desired. Another major difference is that ACLoader will always balance a cargo load and the Weight Shift and cargo placement "***Recalc***" features pretty much do nothing. Cargo is not loaded into the under-floor holds, so total cargo capacity is loaded onto the main deck.

Another difference is that with smaller (GA) planes as cargo carriers, crew baggage is stored into the baggage hold. This is not true on airliners.

Loading the Concorde

Concorde loading is exactly the same as loading any other passenger airliner and is left in for people who still have the Concorde from the FS2000 days. The reason this option exists is for ACLoader to set the CoG offset to the setting required by Flight Simulator. With FS2000, the CoG offset was -50. For FS2002 and later, it sets the CoG offset to -35. These numbers are based on the default FS2000 air file. There are some payware Concorde aircraft out that do not use this offset – they have their own settings. To use these payware aircraft, you will have to look at the default aircraft.cfg before loading with ACLoader. You will have to edit the Concorde data file to see the value in "empty_weight_CG_position". Edit Concorde in ACLoader and set the aircraft type to "Passenger" and manually set the CoG offset ("Weight Shift") to that value after generating a load. There is nothing in the aircraft.cfg file that distinguishes the payware Concordes from the default FS one provided in FS2000 and carried over to later versions.

With the Concorde redefined as "Passenger", the CoG shift has to be done manually. After generating or modifying a load, you have to manually change the Weight Shift to the value you noted before. ACLoader only allows a maximum of +/- 20 in the shift field.

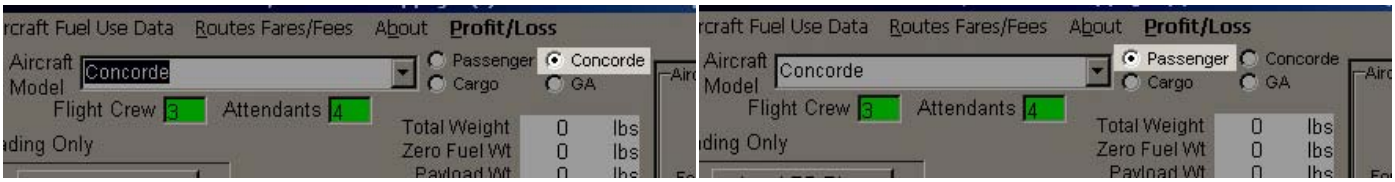


Figure 22: Changing Concorde to Passenger Type

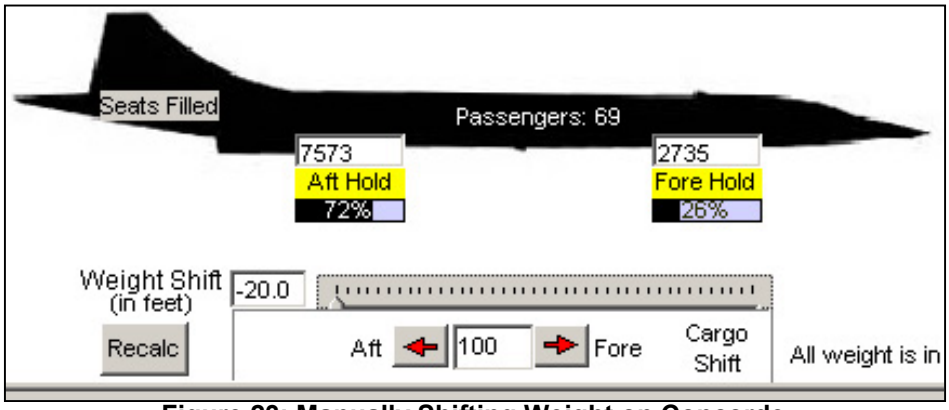


Figure 23: Manually Shifting Weight on Concorde

Using ACLoader Step By Step - Loading Only

Loading Only is almost exactly the same as loading with a plan. What was there before is still there. Before continuing, you should have read the above section first. The only difference is you need to specifically enter the amount of fuel or distance to fly, and food required for the flight.

Check the "***Loading Only***" box. The form now looks like the following.

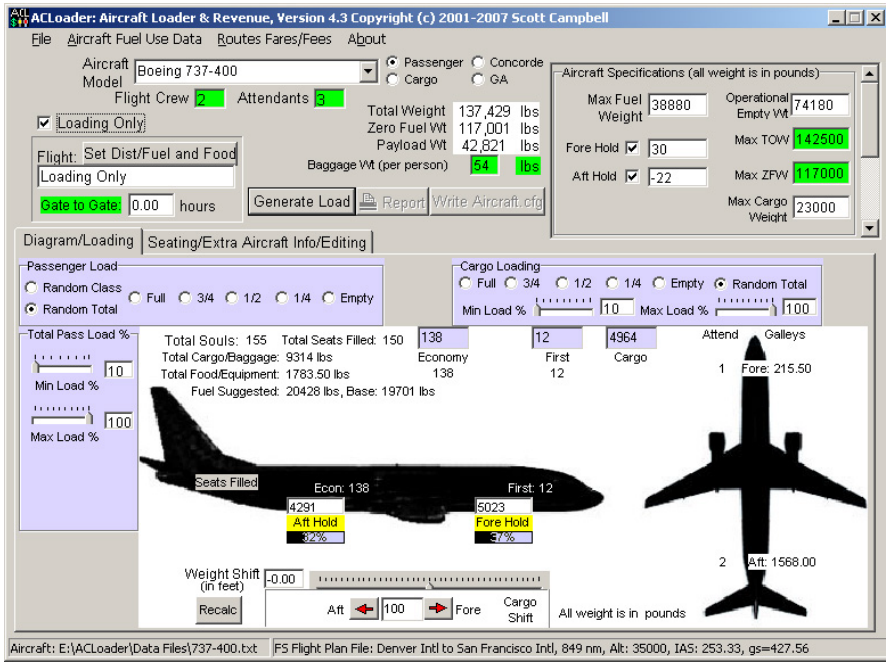


Figure 24: Loading Only Set

Notice how few things have changed. The only noticeable differences are the "***Load FS Plan***" button changed to "***Set Dist/Fuel and Food***", and the Revenue/Cost Report tab disappeared. Also, if you didn't notice, the Denver to San Francisco plan has a maximum baggage weight limit of 66 pounds. But after setting to Loading Only, this value changed back to the Settings Form (page 18) default value of 64 pounds.

Click "***Generate Load***". The number of passengers and amount of cargo changes just like with a plan loaded. However, the amount of fuel and food you had is reset to zero. Look at the weight. Total Weight and Zero Fuel Weight are the same. Accurate loading and balance is only as good as the information you give the program. When using Loading Only there are two things you need to tell ACLoader for an accurate load: fuel you will use and amount of food per person, if any. Fortunately there is a simple way to provide this information.

Manually Setting Fuel and Food Load

Click the "***Set Dist/Fuel and Food***" button. The Fuel/Food form is displayed.

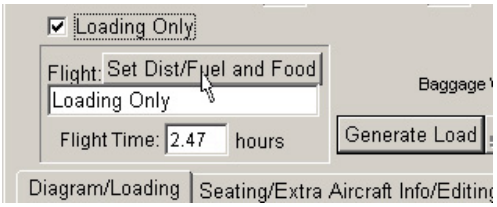


Figure 25: Set Dist/Fuel/Food Button

Let's say we still want to fly from Denver to San Francisco. That's about 852 miles according to the plan load. Enter **852** into the **Distance** field.

We also want to feed the passengers. So enter 2.1 into the **Food** field.

The Food and Fuel weight fields are in either pounds or kilos depending on how you have "***Use Metric***" set on the Settings Form (page 18). The fuel distance field is always in nautical miles.
Click "***SET!***"

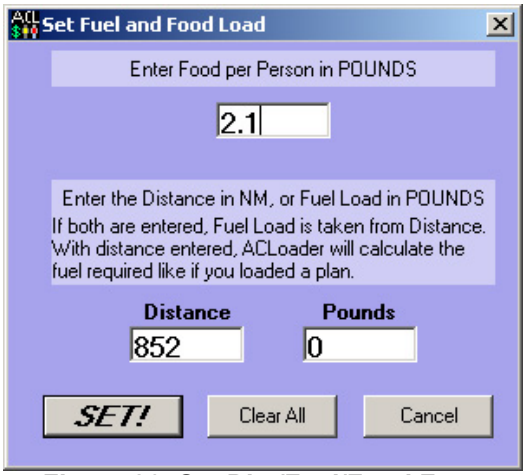


Figure 26: Set Dist/Fuel/Food Form

Now you can see the difference. Total Weight and Zero Fuel Weight do not equal, and you can see there is a fairly large number in the Fuel Suggested field, and a good amount of food and equipment added. Also note that the fuel amount is the same as with plan loading. Manually entering distance is the same as loading a plan.

Food and Equipment Weight

Something not covered in the plan loading section is the food load. What's equipment? The food comes on something – like plates, certainly, but also carts. Drink carts, cans of soda and beer, coffee pots, hot tea dispensers, utensils (yes, my civilized airline provides knives), napkins, bags of peanuts (let's say 137x2 for 274 bags on this plane) and the container boxes they come in, and other items required for the simple act of snacking at 35,000 feet on a 2.5-hour flight. It all adds up. So 2.1 pounds of food per person you add actually adds a lot more.

Warning About Loading to MZFW

If we are flying something smaller and slower, a Cessna say, we might want to sight-see on the way to our destination. We can just load enough fuel until we've flown long enough to take a break. The plus with this is that now we can load up the aircraft with more payload. But there is one important consideration.

This mostly goes for GA aircraft, but can also apply to some commuter props. There is one word of caution about loading an aircraft, like the Cessna 182, to its MZFW (or MTOW for that matter). Let's say we're planning to fly over some very high mountains. As many people can attest, an overloaded aircraft will not clear them. We also need to consider the altitude we need to fly at. Many people make the mistake of thinking I-70 in Colorado goes all the way through the mountains. It doesn't. There's a two-mile long tunnel under a 12,000' mountain. This is where most flatlanders lose their lives.

Rule #1 is: ***>>> Study and know your route before loading any aircraft <<<***

Finding Maximum Range With Manual Fuel Load

There is one fun thing to do with manual fuel loading. We can find the maximum range, at least what ACLoader thinks in the maximum range of an aircraft, which will aid in planning the trip. To do this, click the "***Set Dist/Fuel and Food***" button. Enter some really large number over the maximum fuel weight, like 37000 for the 737-400, or **400000** for the 747-400, into the **Pounds** field as shown here.

Make sure you have "**0**" in the **Distance** field or ACLoader will look at it instead. Click "***SET!***". You'll get a warning to not set a number over the maximum.

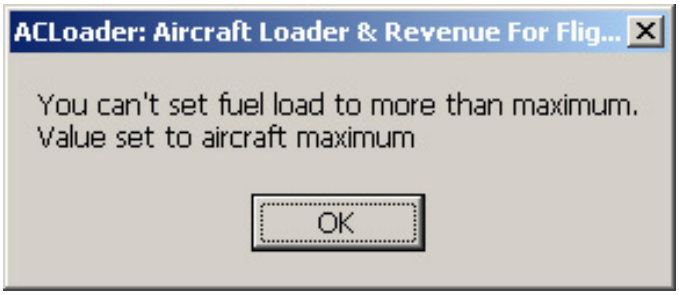


Figure 27: Maximum Fuel Amount Warning

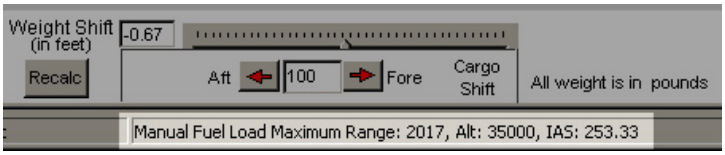


Figure 29: Maximum Distance from Max Fuel

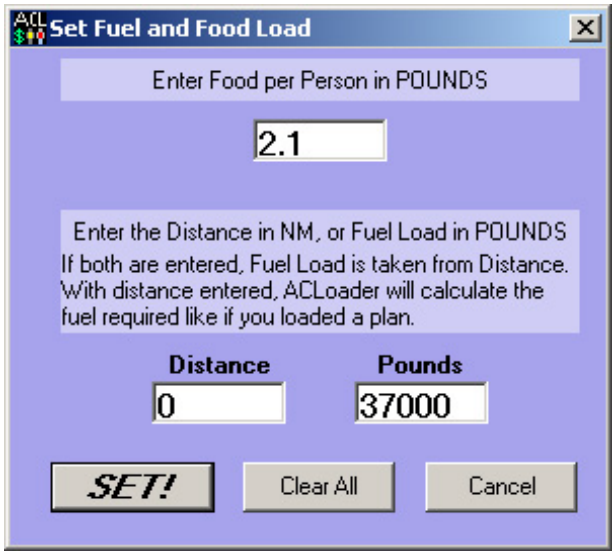


Figure 28: Dist/Fuel Form Over Fueled

Click "***OK***". Now look at the bottom of the Main Form. In the example above, the maximum range of the 737-400 is approximately 2017 nm. It's clearly not completely accurate, but it's certainly close enough for government work.

ACLoader does not calculate wind direction for manual set.

The main thing to keep in mind is that this is a rough estimate. The maximum distance shown is the best-case scenario with ¾ load. The true distance can be very different depending on winds, total weight, temperature, and other

variables like power setting. But it does give a fairly good idea of the range you might want to consider. Keep in mind that you never, ever, *ever*, want to fly the manufacturer's specs maximum aircraft range or you could end up as a grease spot on the rocks somewhere, or floating in little rafts for hours. ACLoader will also fill in the Flight Time based on this estimate. ACLoader does a good job as long as the information provided on the Aircraft Fuel Use Data Table is accurate.

To test it out, try the 747-400. The 747-400 range is about 6600 nm, or Loa Angeles to Sydney, including 45-minute serve and about ¾ load. However, remember that you will most likely hit stiff headwinds and varying temperatures and humidity. So the maximum range varies a lot the further you fly. ACLoader does not take this into account (yet).

Using "Loading Only" and "Write Reports ONLY"

One quick note before going on. On the Settings Form (page 18), you have the option to write reports only and not load or modify an aircraft file. This was initially put in for FS98 users. FS98 doesn't use the same aircraft.cfg file as FS2000 and later.

ACLoader will NOT work with **Loading Only** and **Write Reports ONLY** checked at the same time, and it won't even allow you to do so. For obvious reasons, they are mutually exclusive. Either you wish to only load the aircraft, or you wish to only write the report file. If you check "***Write Reports ONLY***", then the "***Loading Only***" checkbox is cleared. If you check "***Loading Only***", then "***Write Report Files ONLY***" is unchecked. When loading the ACLoader.ini file at start-up, "***Loading Only***" takes precedence. If you do manage to check both (and it is possible, but I won't tell you how), then if "***Loading Only***" is checked, "***Write Reports ONLY***" is unchecked.
For our purposes in this section we are using Loading Only, so the report file that is written does not contain much financial information. It does still contain the loadout and seating info as well as other aircraft info.

Using ACLoader Step By Step – GA Aircraft

The final aircraft type is GA, or General Aviation aircraft. GA Loading is a bit different, whether with Loading Only or with a plan. Let's begin by selecting the Cessna 182. Since we stated with the 737-400, the screen changes as shown below. After selecting the Cessna 182, select "***Loading Only***".

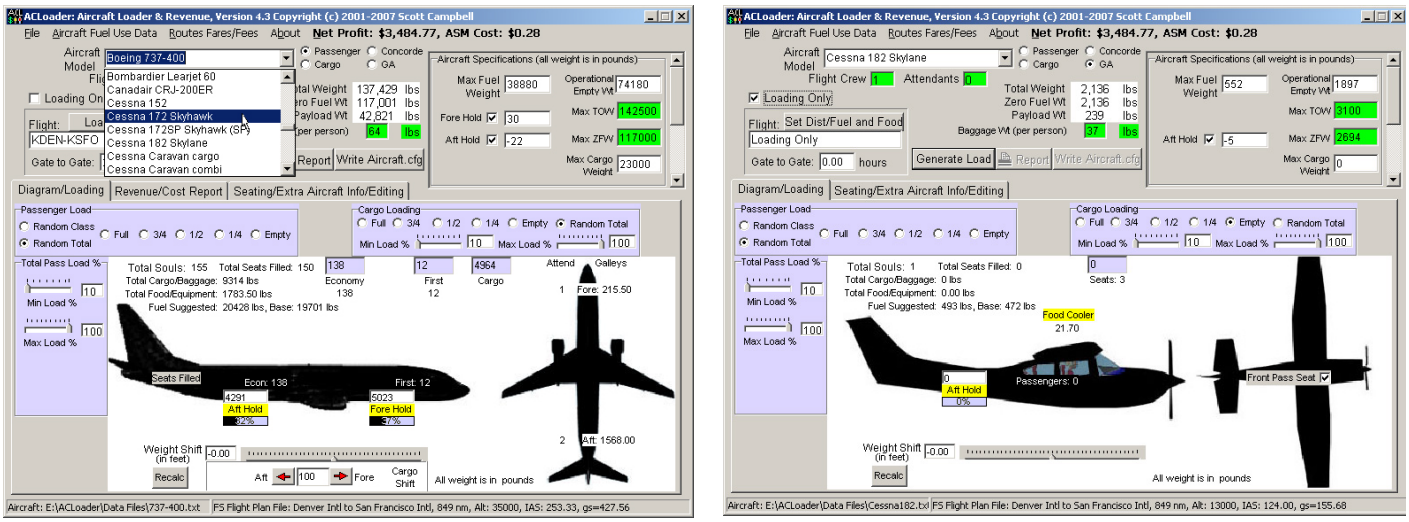


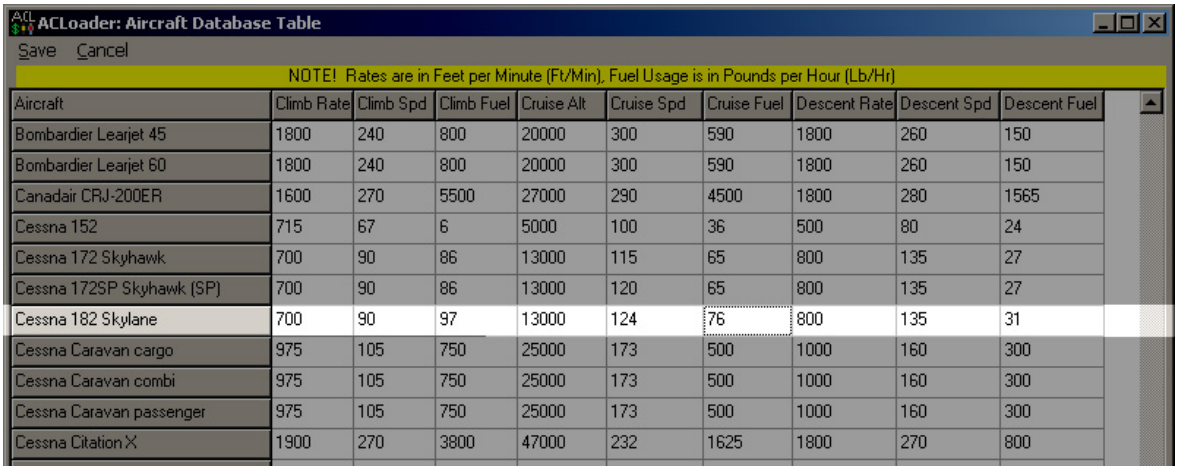
Figure 30: Switching From 737-400 to Cessna 182

If you've been playing along with the above sections, your form will look something like the above.

You can see there are a couple issues. Let's go ahead and fix it. Click "***Generate***" to load the aircraft, then enter **2** into the "**Seats**" field to clear the load error. Looks good but we have too much fuel. Let's load enough fuel to fly for 2-3 hours. Click "***Set Fuel/Dist and Food***". Click "***Clear All***". Then enter "**280**" into the distance field. How the heck do we figure 280 in distance is 2 hours of flight time? By looking at the Aircraft Fuel Use Data Table and making a couple calculations.

First Look At The Aircraft Fuel Use Data Table

Click "***Aircraft Fuel Use Data***" from the Main Menu. Scroll to the Cessna 182.



Aircraft	Climb Rate	Climb Spd	Climb Fuel	Cruise Alt	Cruise Spd	Cruise Fuel	Descent Rate	Descent Spd	Descent Fuel
Bombardier Learjet 45	1800	240	800	20000	300	590	1800	260	150
Bombardier Learjet 60	1800	240	800	20000	300	590	1800	260	150
Canadair CRJ-200ER	1600	270	5500	27000	290	4500	1800	280	1565
Cessna 152	715	67	6	5000	100	36	500	80	24
Cessna 172 Skyhawk	700	90	86	13000	115	65	800	135	27
Cessna 172SP Skyhawk (SP)	700	90	86	13000	120	65	800	135	27
Cessna 182 Skylane	700	90	97	13000	124	76	800	135	31
Cessna Caravan cargo	975	105	750	25000	173	500	1000	160	300
Cessna Caravan combi	975	105	750	25000	173	500	1000	160	300
Cessna Caravan passenger	975	105	750	25000	173	500	1000	160	300
Cessna Citation X	1900	270	3800	47000	232	1625	1800	270	800

Figure 31: Aircraft Fuel Use Data Table - Cessna 182

We want to look at the **Cruise Fuel** field (the 6th numbered field) first. The fuel use is 76, meaning 76 pounds per hour of fuel is burned. So break out your calculator and multiply 76 x 2. That's 152 pounds. Now add the climb fuel (97 pounds per hour) and descend fuel rate (31 pounds per hour), and you end up with 280 pounds of fuel. There's more then cruise fuel in flying, there's climb and descent fuel. Just to have exactly 3 hours until you're dry, enter 280 pounds. Trust me.

If you want food, enter that, too. I like some soda and peanut butter crackers and Cheetos and candy and other munchies, so I'll pack up 2 pounds of food each for me and my pal. We already cleared everything, so enter **2** into "**Enter Food Weight in POUNDS**" and don't forget the 280 in pounds of fuel. Click "***SET!***"

Differences With GA Aircraft Type

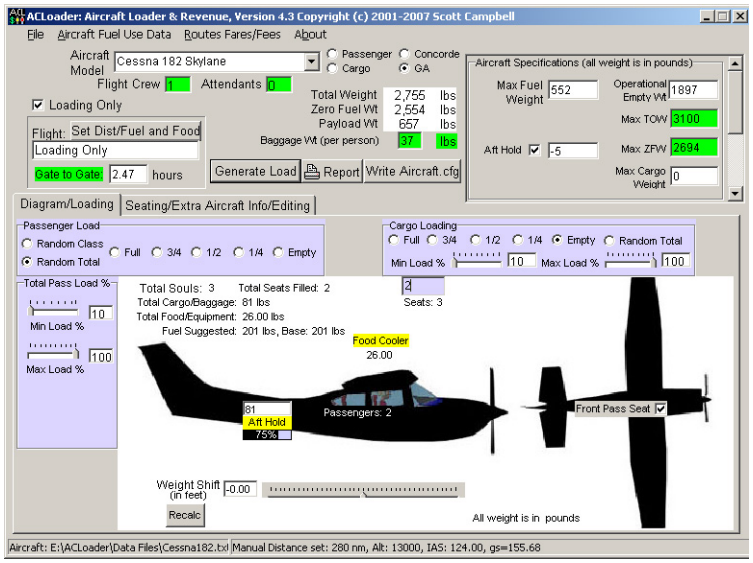


Figure 33: Cessna Skylane Loaded and Balanced

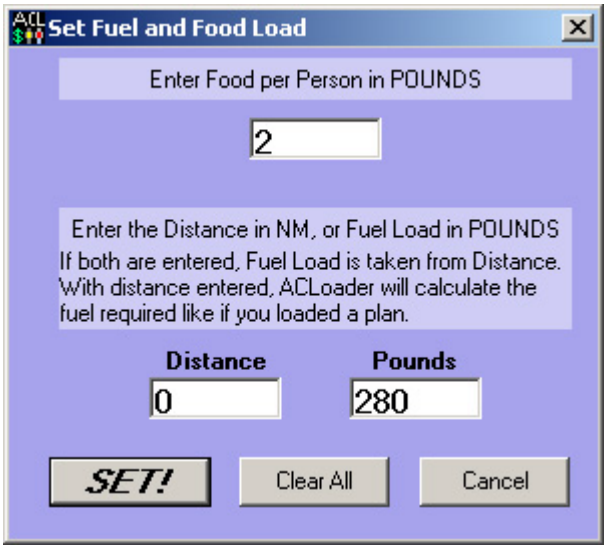


Figure 32: Loading Food and Fuel

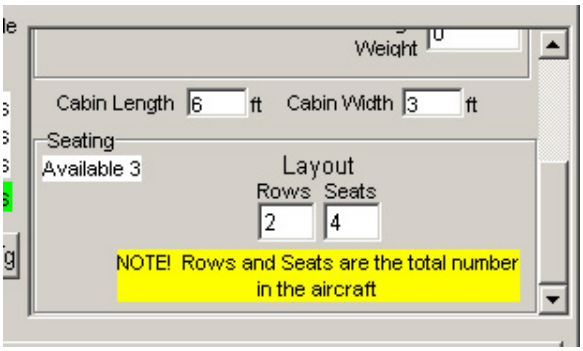


Figure 34: GA Seating Definition

Let's discuss the differences with GA aircraft loading and what's in ACLoader. The first change is baggage weight. On the Settings Form (page 18) you'll note that the maximum weight one can pack into a GA aircraft is 37 pounds by default. Like with any passenger plane, this can be changed.

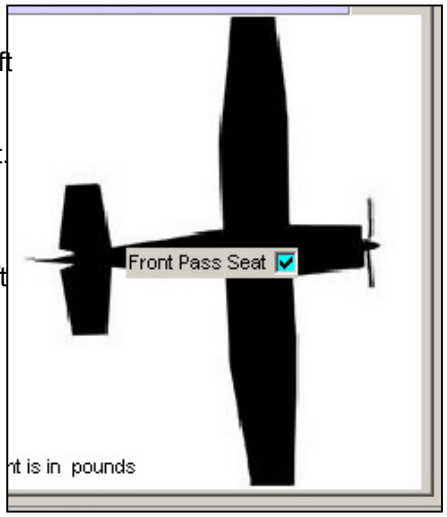


Figure 35: Front Passenger Seat

The second obvious difference is there's room in the front for a passenger. With only one pilot that opens the front seat for someone to sit in. But you can choose to not allow anyone to sit there. If "***Front Pass Seat***" is unchecked, ACLoader won't sit a passenger it there.. The default is checked (see figure right).

The third difference is the seating layout. Unlike passenger aircraft, GA aircraft have specific number of seats defined. There's only one class of seating – "Available", although ACLoader really treats GA seats as Business Class. If you set ticket prices for seating, make sure you do it in Business Class.

Instead of number of rows and number of seats per row, GA aircraft seating is defined as totall number of rows and total number of seats.

One other difference with GA aircraft is that ACLoader will specifically put people and coolers into the seats laterally as well as longitudinally. That means stations are loaded left and right of center. With GA aircraft this makes a bit of a difference, whereas with airliners it makes little difference.

The final difference between GA aircraft and airliners is that the cabin length includes the pilot and co-pilot positions.

Loading with a plan is the same as with airliners ("Passenger"). If you want to define a GA aircraft as cargo, it's exactly same as with airliners, except for pilot placement being left and right of center.

And that's about everything using Loading Only.

ACLoader Files

ACLoader writes several files: the aircraft.cfg file that modifies the aircraft, ACLOADER REPORT.txt, which contains all the financial and loadout information, and the kneeboard files that contains pertinent files you might need to see in Flight Simulator. There are some temporary files written into the execution directory (ACLoader 4.1) as well.

How the Weight and Balance Section is Written.

ACLoader reads the aircraft.cfg file and writes everything in it into the new file exactly as is except for the weight and balance section. If ACLoader finds "{weight_and_balance]", it ignores that section and continues reading and writing the new aircraft.cfg file. ACLoader then writes the new [Weight_and_Balance] section into the new file. This is why it will always be at the end of the file.

Below is the Cessna 182 aircraft.cfg's new [Weight_and_Balance] section. It's the Cessna because I don't have that much paper when I print this manual to print a passenger airliner layout.

Aircraft.cfg [Weight and Balance] Section

```
[weight_and_balance]
// Written by ACLoader 4.3: Aircraft Loader & Revenue
// Copyright © 2001-2007 Scott Campbell

empty_weight=1897
max_gross_weight=3100

station_load.0= " 205.00,  -1.60, 0, -1.00, Pilot"
station_load.1= " 205.00,  -1.60, 0,  1.00, Seat with person"
station_load.2= "  24.00,  -4.60, 0, -1.00, Cooler on seat"
station_load.3= "   0.00,  -4.60, 0,  1.00, Empty Seat"

station_load.4= "   4.00,  -8.60, 0,  0.00, Aft Cargo/Baggage Hold"

max_number_of_stations=9
empty_weight_CG_position=-3.61,0,-0.00                  // (feet) length,side,up
empty_weight_pitch_MOI=1400.0
empty_weight_roll_MOI=1137.0
empty_weight_yaw_MOI=2360.0
empty_weight_coupled_MOI=0.0
reference_datum_position=3.60,0,0.00
```

Wait a minute. ACLoader says the plane is in balance, but the empty_weight_CG_position is -3.61. What's up with that?

Notice reference_datum_position is 3.60. This is the default offset that Microsoft has in the file. ACLoader reads that datum point offset and has to counter it by moving everything negative to that offset to correctly balance the aircraft. If the air file were made correctly, which it isn't, the reference_datum_position would be 0 and the front seats would be at their correct placement of .2 feet forward of the CoG. However, with the counter to the reference datum point factored in, this is how Flight Simulator will see them. The important thing is how the section is written to reflect the loading of the aircraft. The station loads are written exactly as they are in the aircraft less the reference point offset.

ACLOADER REPORT.txt File

Unlike the aircraft.cfg file, the report file has the actual positions and offsets correctly listed, plus financial information if "Loading Only" isn't checked. Although there may appear to still be some financial information in the file with Loading Only, the reason these lines are in is for the weight or quantity of those items.

Following is the Cessna 182 report file.

```
ACLoader: Aircraft Loader & Revenue
Version 4.3.1.23, 10 May 2007
Copyright (c) 2001-2007 Scott Campbell
----------------------------------

 >>>>>  AIRCRAFT WAS ONLY LOADED.  NO FINANCIAL REPORT AVAILABLE <<<<<<

Aircraft: Cessna 182 Skylane
Flight Time: 3.01 hours (gate to gate)

Fuel Suggested : 280.00 pounds (127.00 kilos)

Total Weight    :   2,625 pounds (1,190.67 kilos)
Zero Fuel Weight:   2,345 pounds (1,063.67 kilos)
Payload Weight  :     448 pounds (203.21 kilos)
Baggage Hold Wt :      54 pounds (24.49 kilos)
Food/Equip Wt   :   24.00 pounds (10.89 kilos)

  Number of Flight Crew: 1, Attendants: 0

  Total number of passengers and crew: 2


----- Load Information -------------------------------

  Total seats: 3
        Business
  Seats:    3
  Filled:   1

--------------------------------------------------

     --- Aircraft Loadout and Positions ---

      --- Flight Crew and Attendants ---

   Pilot is located 2.0 feet forward, 1.0 feet left and 0 feet up from CoG
   Pilot and any carry-on weighs a total of 190.00 pounds

   No attendants are on this aircraft

      --- Galleys/Food ---

   Cooler contains 24.00 pounds of food and the cooler itself
   Cooler is located -1.0 feet foward, -1.00 feet of CoG

      --- Passenger Seating ---

   Co-Pilot Seat, weight= 180.00 pounds (Seat with person)
   Row  2 Seat 1, weight=  24.00 pounds (Cooler on seat)
   Row  2 Seat 2, weight=   0.00 pounds (Empty Seat)

     --- Cargo and Baggage Holds ---

   Aft Hold is at -5 feet and has 54.00 pounds of cargo and baggage

  --- CoG Pos: 446 with offset of 0.00 --
```

Kneeboard File

Depending on your Flight Simulator version, ACLoader will either write a file with the same name as the air file with the extension _notes.txt (FS2002), or any name with the _ref.htm extension (FS9). The notes file is fairly straight forward and contains information you may need while you are running Flight Simulator.

If you are flying with FS2002, ACLoader will overwrite your notes file. You may want to make note of that.

Below is the Cessna 182 kneeboard file.

```
ACLoader: Aircraft Loader & Revenue
Version 4.3.1.23, 10 May 2007
Copyright (c) 2001-2007 Scott Campbell
---------------------------------
Flight Time: 3.01 (gate to gate)

Fuel Suggested : 280 lbs (127 kg)

Total Souls on Board: 3
Number of Flight Crew: 1, Attendants: 0

Total Business-class seats:   3, Sold:   2

Total Weight    :   2,834 pounds (1,285.47 kilos)
Zero Fuel Weight:   2,554 pounds (1,158.47 kilos)
Payload Weight  :     657 pounds (298.01 kilos)
Baggage Hold Wt :      81 pounds (36.74 kilos)
Food/Equip Wt   :   26.00 pounds (11.79 kilos)It's all pretty straight forward.
```

What isn't straight forward is that with FS9 the file needs to be defined in the aircraft.cfg file. ACLoader will see if it is defined and write to it. If it isn't defined, ACLoader will enter the file name into the aircraft.cfg and create the kneeboard file. In this case, the Cessna 182 already has a reference file and ACLoader will simply add this information to the end just like with the aircraft.cfg's [Weight_and_Balance] section.

Remember the Airbus A320 with the error from above? If you looked at it, you'd see the kb_reference file isn't filled in for the GuardRail definition, and not present in the Gateway definition. Below are the sections before and after modifying the aircraft.cfg file.

ORIGINAL AIRCRAFT.CFG	AIRCRAFT.CFG AFTER RUNNING ACLOADER
[fltsim.0] title=GuardRail Airbus A320-200 sim=A320200 model= panel= sound= texture= kb_checklists= **kb_reference=** atc_id=N3956GR atc_airline=Garuda atc_flight_number= ui_manufacturer=GuardRail ui_type=Airbus A320-200 ui_variation=GuardRail New description=The Airbus A320\nAircraft design by António Sequeira.\nTextures Copyright Scott Campbell\n\n [fltsim.1] title=Gateway Island Airways Airbus A320-200 sim=A320200 model= panel= sound= texture=GIA atc_id=N827GA atc_airline=Garuda atc_flight_number= ui_manufacturer=Gateway Island Airways ui_type=Airbus A320-200 ui_variation=GIA description=The Airbus A320\nAircraft design by António Sequeira.\nTextures Copyright Scott Campbell\n\n	[fltsim.0] title=GuardRail Airbus A320-200 sim=A320200 model= panel= sound= texture= kb_checklists= **kb_reference=a320200_ref** atc_id=N3956GR atc_airline=Garuda atc_flight_number= ui_manufacturer=GuardRail ui_type=Airbus A320-200 ui_variation=GuardRail New description=The Airbus A320\nAircraft design by António Sequeira.\nTextures Copyright Scott Campbell\n\n [fltsim.1] title=Gateway Island Airways Airbus A320-200 sim=A320200 model= panel= sound= texture=GIA atc_id=N827GA atc_airline=Garuda atc_flight_number= ui_manufacturer=Gateway Island Airways ui_type=Airbus A320-200 ui_variation=GIA description=The Airbus A320\nAircraft design by António Sequeira.\nTextures Copyright Scott Campbell\n\n

Settings Form – The Details

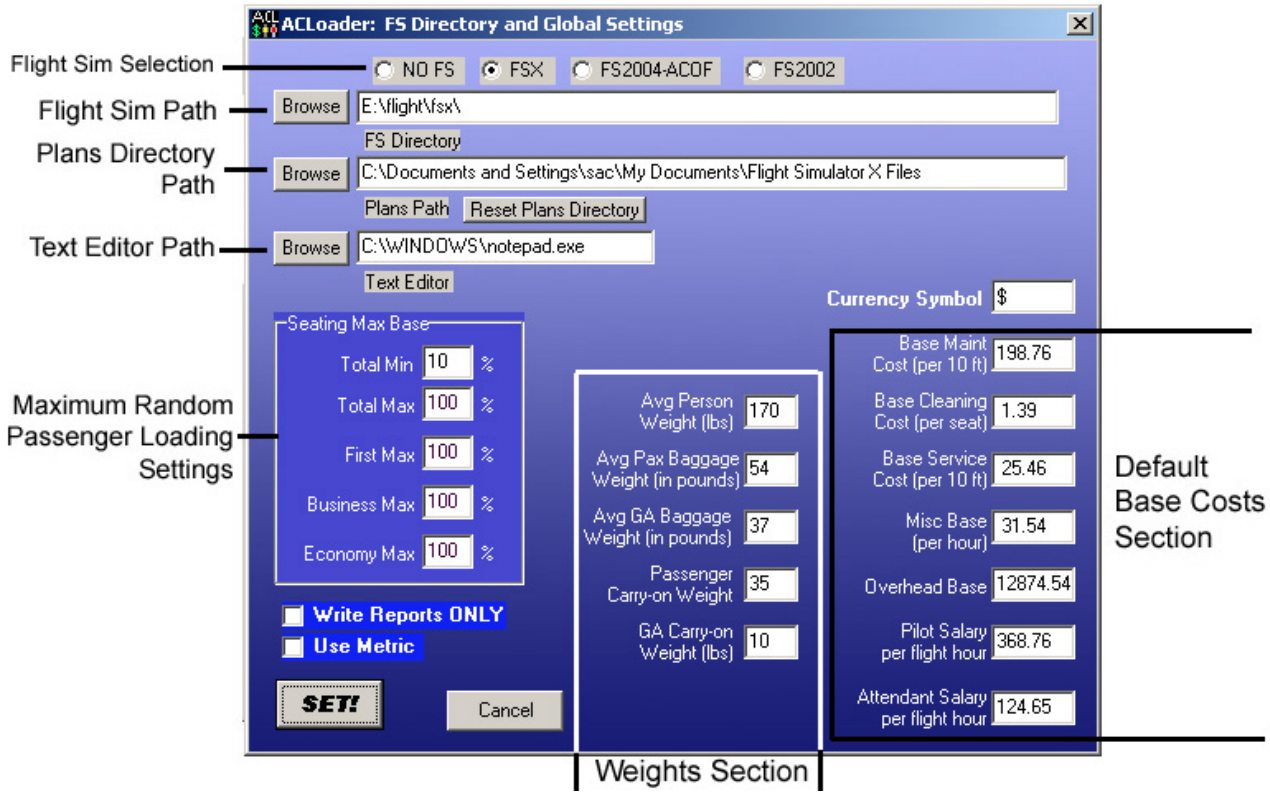


Figure 36: Settings Form

The Settings form is used to set the paths to your Flight Sim directory, plans directory and text editor, You set the default numbers for average person and baggage weights, base cost numbers, and use of metric instead of Imperial, if you only want the report file written, and what currency symbol(s) you use.

If you are using no Flight Simulator, you need to make sure "**Write Reports ONLY**" is checked. If ACLoader doesn't find FS2002, FS2004-ACOF or FSX, that box is automatically checked and disabled. Only when one of those sims is found is that box unchecked and enabled. You can browse to any location you wish ACLoader to write the "ACLOADER REPORT.txt" file to for your FS Path if you are going to use "Write Reports ONLY". The difference between modifying an FS2002/FS2004/FSX aircraft and just writing the report file is the aircrarft.cfg file is also modified and you, of course, fly it.

Select the FS version you are using from those offered, or ACLoader automatically finds one and sets it. As stated above, ACLoader will work without any Flight Simulator, but if you want to modify an aircraft's weight and balance you need to specify the path to whichever FS version you are using.

ACLoader then looks for the path to your plans directory based on the FS version you are using. If the path to the plans directory doesn't look right, click "***Reset Plans Directory***". ACLoader then resets the path. You can also browse directly to any path you wish for your plans. For example, if you are using FSX and want to load plans from FS2004, browse to your FS2004 plans directory.

Where Do I Get the Base Numbers?

The weights are taken from industry average numbers they use. The costs are mainly made up from using the program, flying, and adding up all the flight profits and losses, as well as using annual reports. The general rule is that the break-even point for any flight is an aircraft with 70% passenger and 50% cargo load at reasonable base ticket/cargo price. Cargo flights have a break-even point of about 40-50% full, but cargo is where the profit for any airline really is. Since you have a very captive audience, you can obviously charge whatever you want and have completely full planes. But it's good practice to keep it realistic. Some of this information can be found in airline annual reports and trade journals.

Table 1: Setting Form Items Description

SECTION/ITEM	DEFAULT VALUE	DESCRIPTION
Flight Sim Selection	Location found in your registry	This is the path to your FS directory. ACLoader looks in the registry to see the latest version you have installed and sets to that path. If there is no registry entry, ACLoader sets to the directory it is running in and "NO FS" is checked, which can all be set manually.
Flight Sim Path and **Browse** button	Location found in your registry	Same as above. Use the Browse button to set the path.
Plans Path and **Browse** button	Depends on your FS version	Path to the plans directory used by your Flight Sim version. Use the Browse button to set the path if you want to set a different path.
Reset Plans Directory button	none	Forces ACLoader to reset the plans directory path to that used by your FS version.
Text Editor	**Notepad.exe**	Sets the path to your Text Editor. ACLoader will initially set this to notepad.exe. Use the Browse button to set another program.
Seating Max Base Numbers	**10% to 100%**	The numbers in these fields represent what the default maximum random passenger load sliders will default to on the Main Form (page 20). **Total Max** is for the total number of seats loaded randomly. **First, Business, Economy Max** are for per-class random loading.
Write Reports ONLY	**NOT checked**	Tells ACLoader whether to only write the report file or to modify the aircraft.cfg. This is mostly used when not modifying an aircraft.
Use Metric	**NOT checked**	If you want to use Metric (kg/meter) instead of Imperial (lb./feet) weights and distances, check this box.
Currency Symbol	**$** (Dollar Sign)	Set the symbol(s) used by your country for currency.
Default Base Cost Numbers	Varies per field	Numbers applied to a flight when you click the "***Use Default***" buttons found on the Seating/Extra Aircraft Info/Editing tab (page 27). **Pilot Salary: 368.76 -** per-hour cost of each flight crew person. This may appear to be a high number, but pilots don't fly all the time, yet their salaries are paid all the time. **Attendant Salary: 124.65 -** same as Pilot salary.
Default Weights Section	Varies per field	**Avg Person Weight: 170** This number is not seen anywhere on the Main Form (page 20), but is used extensively in calculating all weights when loading passengers and flight crews. Attendants have a hard-coded internal number that is about 145 pounds. **Avg Pax Baggage Weight: 64** Used for Passenger aircraft. Used for "Loading Only" and when a Route Record is not found. This number can be changed on the Main Form (page 20) before generating a load. **Avg GA Baggage Weight: 37**. Same as above, except for GA aircraft. Usually you wouldn't want a lot of baggage on the small aircraft. So this just makes it easier than changing the weight every time you select a GA aircraft. **Passenger Carry-on Weight**. This is the amount of baggage that is carried on the plane for passenger-designated aircraft. This amount is removed from the Total baggage weight defined above. If this number is more than Avg Pax Baggage Weight, it is reset to Avg Pax Baggage Weight. This is also true for the baggage weight defined on the Main Form (page 20), which can be either taken from the above Avg Pax Baggage Weight, or the Route Data Record (page **Error! Bookmark not defined.**) if one is used. **GA Carry-on Weight**. Same as passenger, except for GA aircraft.

Main Form – The Details

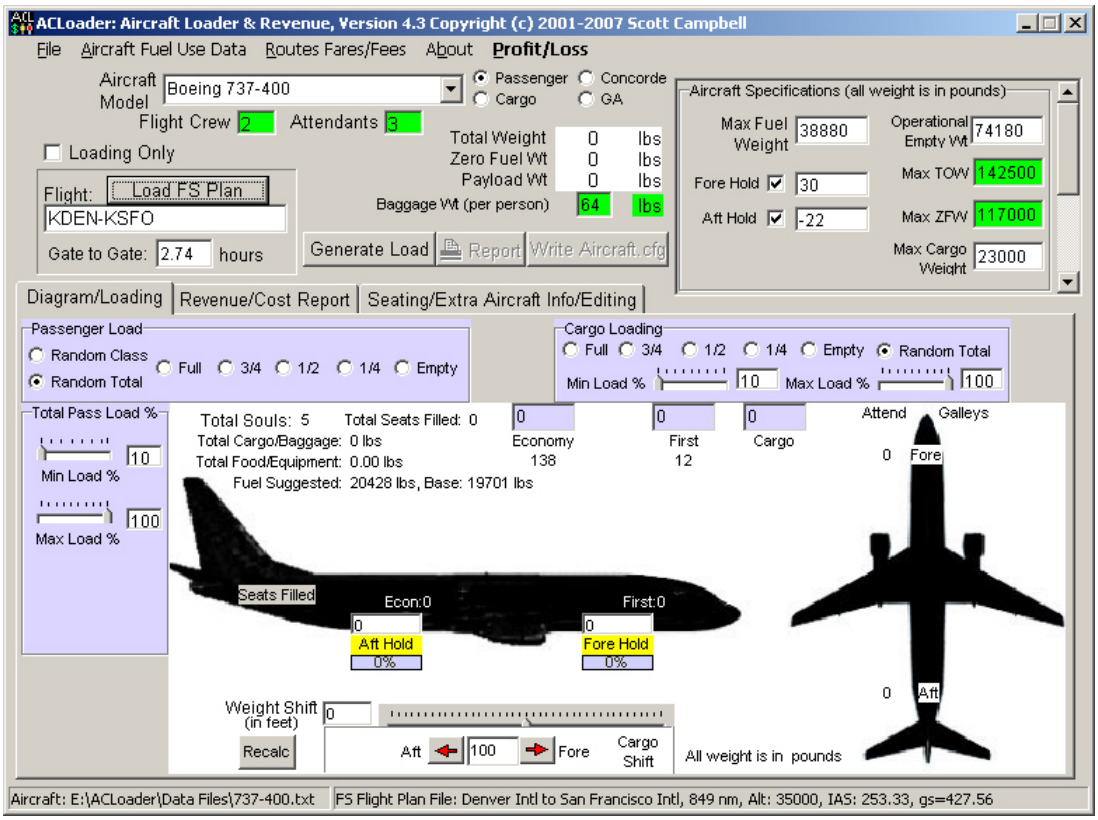


Figure 37: Main Form

The main form displays an image of the type of aircraft you are loading. It also has all the loading options, editing options, sizes, weights, and everything you need to load an aircraft. From here you can load an aircraft immediately without any other information by using the "Loading Only" option, or load a plan for cost and revenue information. Everything you do to modify the aircraft is done from here. The following sections describe each area of the form, as well as descriptions of the Diagram and Loading tab (page 24), Revenue/Cost Report tab (page 26) and the Seating/Extra Info/Editing tab (page 27).

Changing Dynamic Fields

Everything in green on all the tabs and in the upper part of the form can be changed before or after generating a load without editing the aircraft data file. These are called dynamic fields. The exception is that everything on the ***Diagram/Loading tab*** (the current view above) is changeable. With fields in green, when a value is changed the label will turn green. When a label is green, you can click the label and the field reverts back to its default value - usually from an associated Route Data Record (page **Error! Bookmark not defined.**) when a plan is loaded. If you change these fileds after generating a load, you should **RIGHT-CLICK** on the "***Generate Load***" button to force ACLoader to recalculate everything.

The "**Baggage Wt (per person)**" label, on the upper part of the form can be ***LEFT-CLICKED*** to reset to the plan default, or ***RIGHT-CLICKED*** to set to the Settings Form (page 18) default.

Fields ***not*** in green and not on the Diagram/Loading tab can only be changed when you edit the aircraft data file (see Creating and Editing an Aircraft Data File - page 34). There are fields that can't be changed at all, like the load weights on the upper section of the form, or anything that needs calculation to be filled in.

You will note that MTOW (Maximum Take-off Weight) and MZFW (Maximum Zero Fuel Weight) are changeable. The reason is that in the real world you cannot load an aircraft as much at higher altitudes, or higher density altitude (Arizona on a really hot day), as you can at lower altitudes or cooler days. Aircraft have to have reduced Max weights to be able to take-off at the same speed. The less air there is the faster you have to go to attain lift. Even though Flight Simulator doesn't seem to care about altitude (or density altitudec for that matter) this feature exists to represent reality.

Main Menu

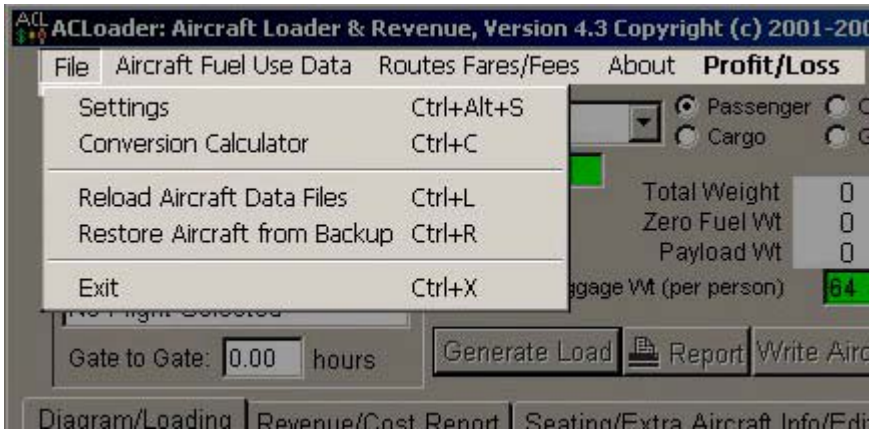


Figure 38: Main Menu

Table 2: Main Menu Items Description

SECTION/ITEM		DESCRIPTION
File	**Settings**	Opens the Settings Form (page 18)
	Conversion Calculator	Opens the Conversion Calculator (page 41)
	Reload Aircraft Data Files	This function reloads all the aircraft data files, and updates the "Aircraft Model" list.
	Restore Aircraft from Backup	Opens the FS Aircraft List (page 8) where you can select an aircraft which you want the aircraft.cfg file restored from the backup ACLoader makes. This is in case the new aircraft.cfg file ACLoader wrote isn't working well with that aircraft. ***Note!*** When restoring from the aircraftcfg.bak file, any changes you made to your aircraft.cfg file after running ACLoader the first time on this aircraft will be lost. ACLoader only writes the aircraftcfg.bak file once per aircraft.
	Exit	Ends the program
Aircraft Fuel Use Data		Opens the Aircraft Fuel Use Data Table (page 28)
Routes Fares/Fees		Opens the Routes Fares/Fees Data Table (page 29)
About		Displays the ACLoader version, build, date, and copyright information
Profit/Loss		This is for information after generating a load and doesn't do anything if you click it. If you are using Loading Only, this field doesn't exist.

Aircraft Model and Load Weights Section

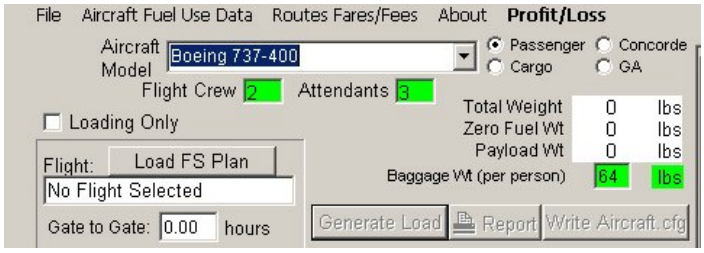


Figure 39: Aircraft Model and Generate Load Plan Load

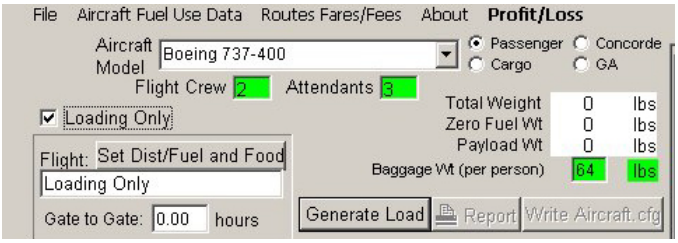


Figure 40: Aircraft Model and Generate Load Loading Only

Table 3: Aircraft Model and Generate Load items description

SECTION/ITEM	DESCRIPTION
Aircraft Model	The aircraft model you want to modify. This is ***not*** a list of aircraft in your FS Aircraft directory. This is a list of the aircraft data files included with ACLoader, or ones you defined or download and save in ACLoader 4.1\Data Files.
Aircraft Type	**Passenger, Cargo, Concorde, GA** (general aviation). Processing is handled differently depending on the aircraft type.
Flight Crew	Number of pilots and flight engineers in the cockpit.
Attendants	Number of Flight Attendants in the cabin.
Loading Only	Allows for aircraft loading without need of route data records or plan loading. When checked, processing does not produce a financial report. The "***Load FS200x plan***" button changes to "***Set Dist/Fuel and Food***" for manual entry of fuel and food load.
Flight Box – **Load FS200x Plan**	**If "Loading Only" is not checked**, this button opens a dialog to load a Flight Simulator plan. The "Generate Button" is not enabled until you load a plan. **If "Loading Only" is checked**, this button reads "**Set Dist/Fuel and Food**". When clicked, the Distance/Fuel and Food Load form is opened (see Using Loading Only, page 10). The Generate Button is enabled for immediate loading.
Flight Box – **Flight:**	When an FS plan is loaded, this field displays the ICAO codes for departure and arrival airports (i.e. KDEN-KSFO). When "Loading Only" is checked, this box simply says "Loading Only".
Flight Box – **Flight Time**	When a plan is loaded this displays the time from gate to gate. When "Loading Only" is checked, and a distance or amount of fuel is entered into the Dist/Fuel and Food Form (page 10), the total fuel time is displayed.
Weights	These numbers are filled in automatically when you generate a load. **Total Weight:** Weight of aircraft with everything loaded including fuel **Zero Fuel Wt:** Operation Empty Weight plus Payload Weight **Payload Wt:** Weight of everything loaded except fuel **Baggage Wt (per person)** – ***total*** amount of baggage a person will bring to the airport to put into the plane. Carry-on luggage, defined on the Settings Form (page 18), is subtracted from this weight and added to the person weight, also defined on the Settings Form.
Generate Button	This is what actually generates the load. You need to click this before changing anything like cargo sold, or tickets sold. See Using ACLoader Step by Step (page 5) on when this needs to be clicked again. All processing takes place when this button is clicked. Right-clicking this after generating a load forces ACLoader to recalculate everything without changing anything.
Report	Flight Sim aircraft report with duel and costs and loading.
Write Aircraft File	Click to open the Write Aircraft Save Dialog (page 8) to write the new aircraft.cfg and kneeboard files, and ACLoader report file. If "Write Reports Only" is checked in the Settings Form, then a Save dialog is opened for you to select a location to write the report file.

Aircraft Specification and Seating Definition Section

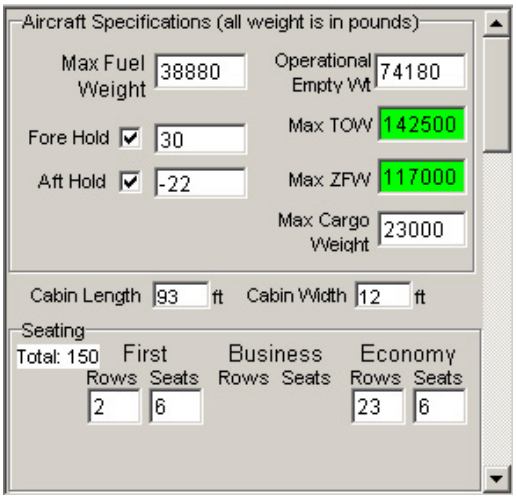


Figure 41: Aircraft Specification section (Normal Mode)

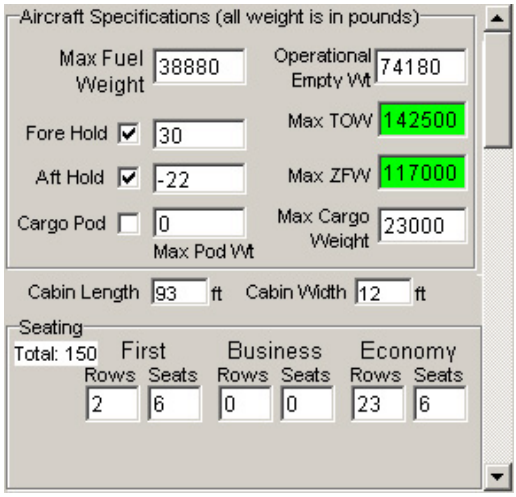


Figure 42: Aircraft Specification section (Edit Mode)

Table 4: Aircraft Specification Panel Items Description

SECTION/ITEM	DESCRIPTION
Max Fuel Weight	Total weight of fuel that can be loaded onto this aircraft.
Fore/Aft Holds	Checked if this aircraft has a Fore and/or Aft cargo/baggage hold. The numbers to the right of each is the longitudinal placement in the aircraft relative to the ref point. If the aircraft routinely loads one bay or another and leaves the other empty, shift the location of either.
Cargo Pod	Checked if this aircraft has a lower attached cargo pod
Max Pod Weight	Total weight of cargo/baggage that can be put into the pod. Cargo is removed from the hold(s) and placed in here if there is room. Baggage is always placed in cargo holds first.
Operational Empty Weight	Weight of the aircraft with everything needed to fly, including seats, lavatories, potable water, oil, etc. Everything but dynamic loads - fuel, cargo, bags, people, carts, etc.
Max TOW Max ZFW	Maximum Take-off Weight and Maximum Zero Fuel Weight. These can be reduced to load an aircraft at higher altitudes. This is described in Creating/Editing Aircraft Data Files (page 34).
Max Cargo Weight	Total cargo weight not counting baggage in holds. Usually ½ design max payload weight
Cabin Length	Length of cabin from forward bulkhead behind cockpit to aft bulkhead before tail including aft galley is present For GA aircraft, also includes “cockpit” (where pilot and co-pilot are seated).
Cabin Width	Average max width of cabin. Only used for GA aircraft seating at present.
Seating section	**Total** – available seats. For Passenger jets, it is the total number of Passenger seats.per row. For GA, the total number. The example above shows 12 first and 138 economy seats. **First, Business, Economy** – **for passenger planes**, this is the number of rows, and seats per row on lower and upper decks. **For GA aircraft** the seating layout changes. Instead of rows and seats per row, it is total number of rows and total number of seats, including pilot and co-pilot. It is important to note that ACLoader treats GA seating as all Business Class. When you price tickets, make sure you have something listed in the Business-Class section if you are going to sell seats on GA aircraft. GA Seating is covered in Differences With GA Aircraft, (page 14).

Diagram and Loading Tab

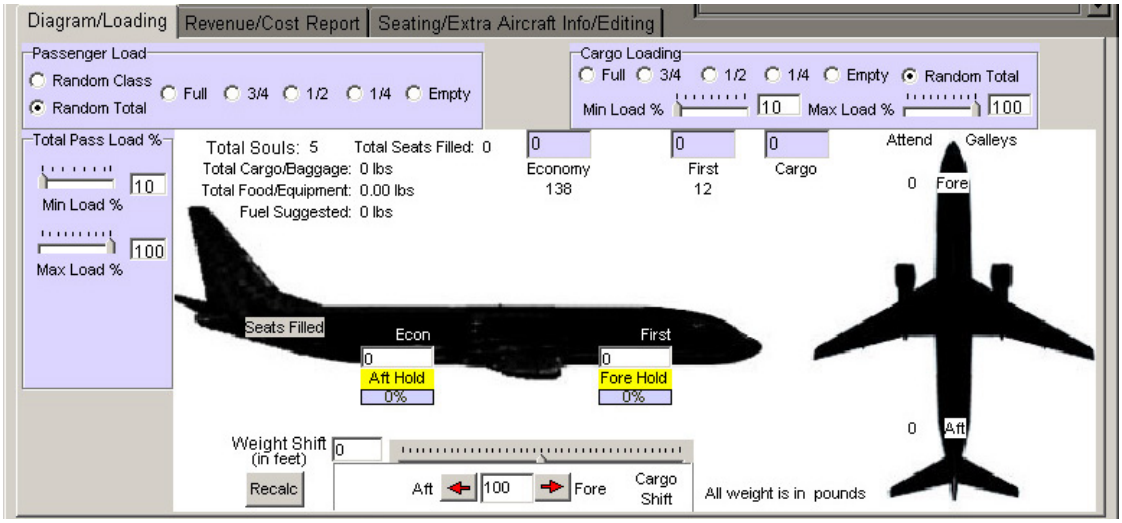


Figure 43: Diagram and Loading Tab

This is the central part of the Main Form. This is where you set the passenger and cargo loading scheme. After generating a load, you can also manually change the number of seats filled per class, or total number of seats filled on GA aircraft.

Passenger Load: Set the type of passenger loading you want. If you click "Random", then loading will fall between the Min and Max numbers set on either the Random Total set, or the Random Class set (see below). The max numbers you set on the Settings Form (page 18) determine what the Max slider is initially set to.

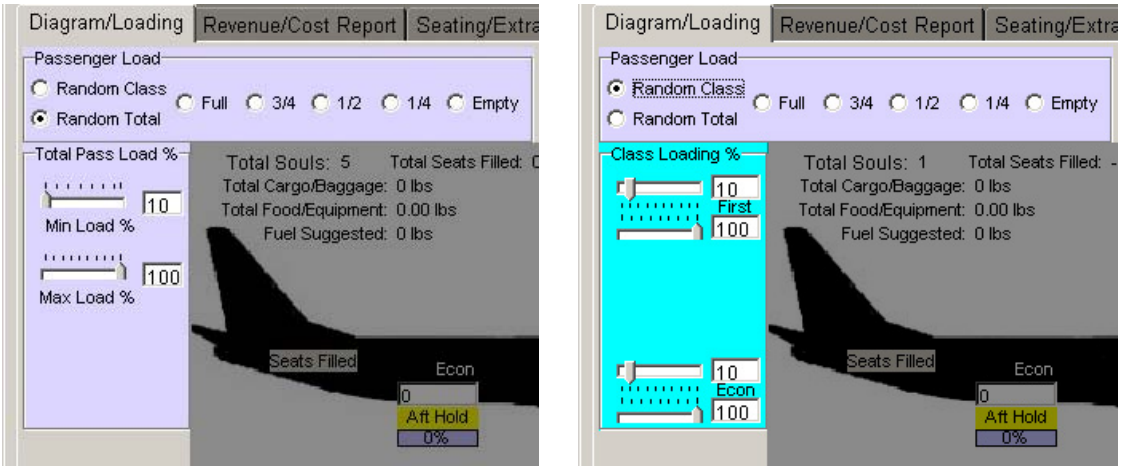


Figure 44: Random TOTAL and CLASS Loading Sliders

In this case the 737-400 only has First and Economy class, so class loading only displays First and Economy class.

Table 5: Remainder of "Diagram and Loading" Items

SECTION/ITEM	DESCRIPTION
Cargo Loading	Like Passenger loading, you can select the type of Cargo load you want. If random is selected, the min is 10%. When Max Cargo Weight is 0 (zero), ACLoader automatically sets this selection to "Empty", and disables the selection. You need to remember to change this again when you use an aircraft that has cargo capability.
Total Souls	This is the total number of people on the aircraft, including flight crew and attendants
Total Seats Filled	This is the total number of seats filled that are not flight crew or attendants
Total Cargo/Baggage	Amount of cargo sold (loaded) plus the amount of baggage put into the hold. This number will not equal the cargo sold value if the Carry-on amount is less than baggage weight amount.
Total Food/Equipment	This is the weight of food and carts and other equipment needed to feed the crew and passengers, including carts weight, or cooler weight.
Fuel Suggested	Weight of fuel you need to load. This number is calculated when you either load a plan, or select "Loading Only" and set the distance on the Fuel/Dist and Food Form (page 10). If you set the fuel itself on the Fuel/Food Form, or edit the fuel requirement on the Revenue/Cost Report tab, that number is displayed here.
Seats/Cargo	**First, Business, Economy, Cargo** sold are displayed here. After generating a load, you can manually change these values. If there is no respective class, or no cargo, that box is removed.
Weight Shift/ Cargo Shift section	If after loading passengers and cargo, ACLoader cannot balance the load, a CoG offset is calculated. That value is displayed in the offset box and the slider is moved towards that direction. You can manually change the offset by sliding the slider. To zero the offset, right-click the slider. In the real world you cannot simply shift the CoG of an aircraft. Physics has a problem with that. What you need to do is shift the cargo between the fore and aft holds. If there is not a fore or aft hold, or a hold is full, you need to see what else you can do, like removing cargo, or adding cargo if the holds aren't full. If you really mess up and move cargo all over the place, click the "***Recalc***" button and ACLoader goes back to its calculated offset, placing cargo appropriately. This is also a good thing to use when adding or removing cargo just to be certain ACLoader resets the CoG offset correctly. Also keep in mind that ACLoader knows nothing about tail or extra center tanks that shift weight fore or aft. You need to know what the CoG offset is for any aircraft with extra tanks, and shift the weight accordingly, remembering that as fuel burns off the weight shifts. In the real world you can control where fuel is, but for some reason in the FS world fuel transfer isn't available. In FS, depending on your panel, you can only move fuel between the Center1 and Center 2 tanks. It just takes experience to know how to balance an aircraft with loading.
Diagram Layout	After generating a load, ACLoader will display how much of what is loaded where. The diagram shows the number of passengers loaded per class and floor (Main and Lower or Upper if present), amount of food/equipment per galley (if there are any), where the attendants are (if any), and how much cargo/baggage is in the holds (depending if you have holds), and cargo pod (if present). This just gives a nice overall picture of how the aircraft is loaded.

Revenue/Cost Report Tab

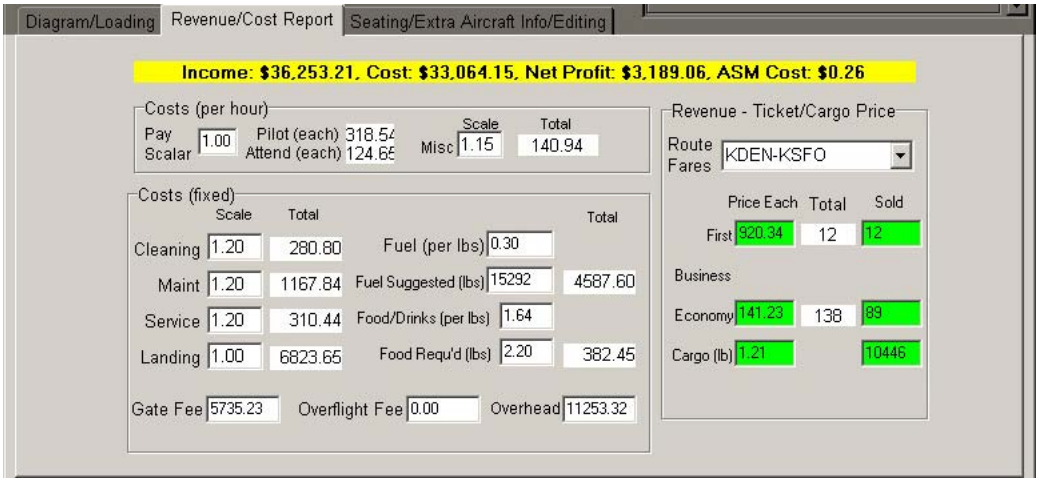


Figure 45: Revenue/Cost Report Tab

Although these fields can be set manually, all of these fields are permanently set in the Aircraft Data File and Route Data Records, discussed later.

Table 6: Revenue/Cost Tab items description

SECTION/ITEM	DESCRIPTION
Cost (per hour)	**Pay Scalar**: The scale that pay is multiplied by for the flight crew and attendants with the total per/hour cost displayed. **Misc Scale**: Misc cost is multiplied by this number giving the **Total** per flight hour cost
Costs (fixed) – *Scale and Total*	**Cleaning, Maint**(enance), **Service**, and **Landing** costs are multiplied by the scale values, giving the Total amount applied to the entire flight.
Cost (fixed)	**Fuel (per lb/kg):** Cost of fuel per pound or kilo if "Use Metric" is checked on the Settings Form (page 18). **Fuel Suggested (lbs/kg):** Weight of fuel required for this flight. This number is the same as the Fuel Required field on the Diagram and Loading Layout Tab (page 24) **Food/Drinks (per lb/kg):** Cost of edibles and drinks per pound or kilo if "Use Metric" is checked on the Settings Form (page 18). **Food Requ'd (lbs/kg):** Weight of food and drinks required per person for this flight. This number is not the same as the Food Required field on the Diagram and Loading Layout Tab (page 24), because that value is the total weight of all food, drinks, and items to serve/carry it.
Cost (fixed) – **Fees**	**Gate Fee**: Fee to park at and use the gate/stand facilities **Overflight Fee**: Total fees for overflying other territories or countries and using their radar/ATC services **Overhead**: Basic cost to run the company spread across the fleet (not proportional) applied to this aircraft (not route)
Route Fares	Name of Route Record to apply to this flight. If you load an FS plan, this is filled in automatically with the matching name in the records. If no record is found, then it says "[none]". Use the pulldown to select another route record to apply to this flight.
Revenue – Ticket/Cargo Price	**Route Fares**: This is the Route Data Record (page 29) from which the ticket prices and costs are taken. **First, Business, Economy** – **Price Each** is the price per ticket. **Total** is the total number of seats available in that class. **Sold** is the total number of tickets sold for that class. **Cargo** – **Price Each** is the per-pound/kilo fee for cargo. **Sold** is the total weight of cargo sold in pounds or kilos.

Seating/Extra Aircraft Info/Editing Tab

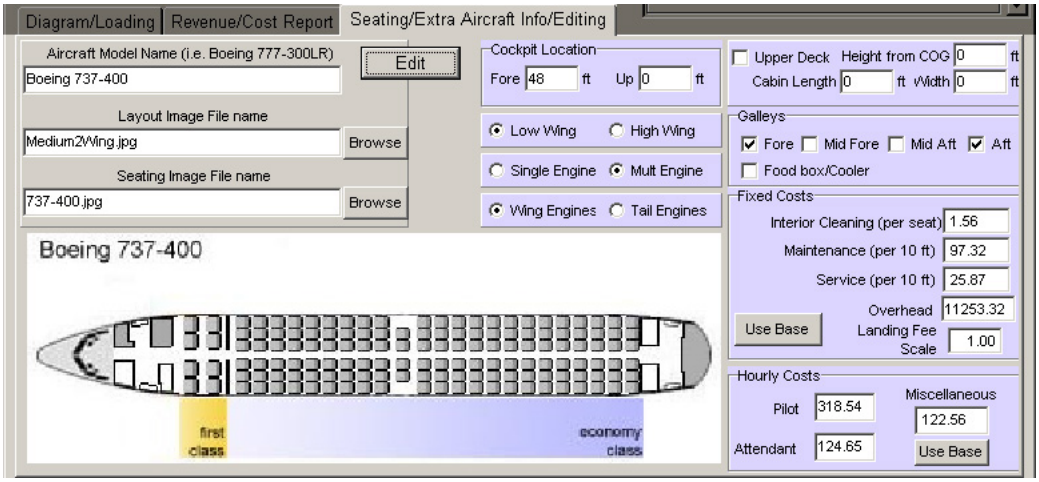


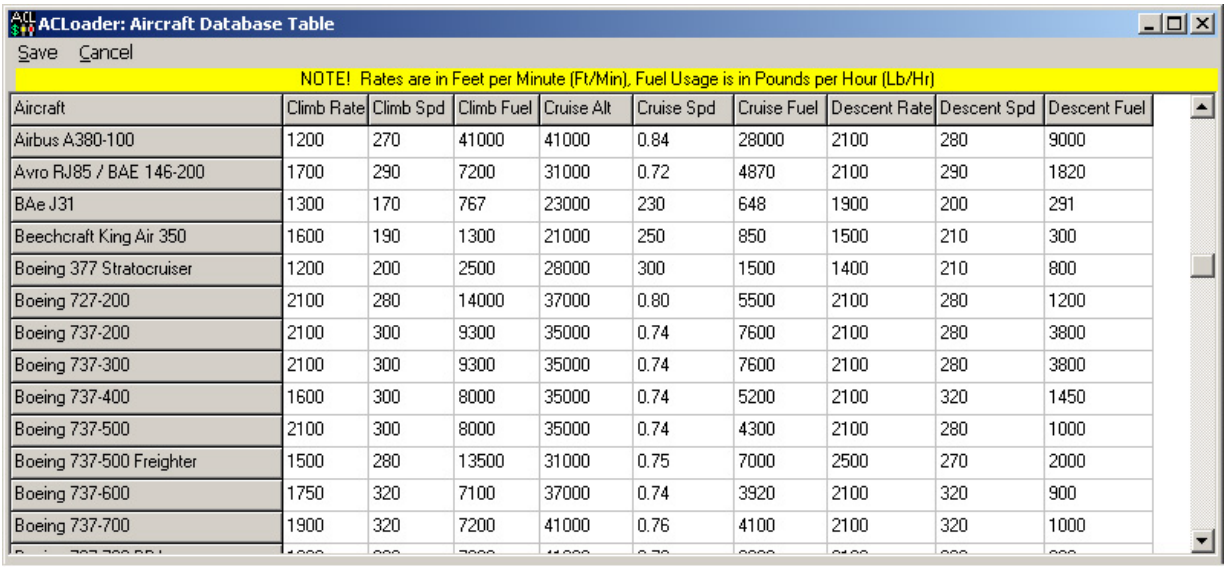
Figure 46: Seating/Extra Aircraft Info/Editing Tab

This is the tab you want if you want to make or edit any aircraft data record, or just to see the seating map of an aircraft. Everything that is in the aircraft data file is displayed here and in the Aircraft Specification panel above. When "Edit" is clicked, all items, seats, and decks become visible and changeable. For full details, read Creating/Editing Aircraft Data Files (page 34) later in this document.

Table 7: Seating/Extra Aircraft Info/Editing Tab items description

SECTION/ITEM	DESCRIPTION
Aircraft Model Name	The name as displayed in the Aircraft Model list on the top of the Main Form (page 20).
Layout Image File Name and **Browse** button	The layout image is the profile on the Diagram/Loading Tab (page 24) that shows the silhouette of the aircraft with the load displays. Use ***Browse*** to select from the jpg files under the "**ACLoader 4.1**" directory.
Seating Image File Name and **Browse** button	File name of the seating map image at the bottom left of this tab. Use the ***Browse*** button to select from the "***ACLoader 4.1\Data Files***" directory. If you have your own seating map, it is best to place it into that directory instead of having it elsewhere on your system.
Edit button	Click this to set editing mode so you can edit or make a new aircraft data file.
Cockpit Location	This is where the cockpit is located from the CoG point of the aircraft.
Low/High Wing Single/Multi Engine Wing/Tail Engines	These are for the layout image item placement and aircraft type information processing.
Upper Deck	If checked, this aircraft has an upper deck, like a 747 or A380. The **Height from CoG** field is how high (or minus for low) the deck is (usually 12 feet). **Cabin Length** and **Width** are the average length and width of the upper/lower cabin. If the cockpit is on the upper deck, the Length does not include that, just from the fore bulkhead to aft bulkhead.
Galleys	Checked for each galley that exists on this aircraft on the main deck. If there are no galleys, but there is a food cooler (usually on GA or small aircraft), then that is checked. If nothing is checked, there can be no attendants since there's nowhere to put them.
Fixed Costs	Values for these costs are per listed unit. If "***Use Base***" is clicked, it uses the default base numbers from the Settings Form (page 18). The difference is "***Landing Fee Scale***". This is the scalar for landing fee found in the Route Data Record. The larger the aircraft, the more it costs to land.
Hourly Costs	Values per hour per listed item. Clicking "***Use Base***" is the same as above.

Aircraft Fuel Use Data Table



Aircraft	Climb Rate	Climb Spd	Climb Fuel	Cruise Alt	Cruise Spd	Cruise Fuel	Descent Rate	Descent Spd	Descent Fuel
Airbus A380-100	1200	270	41000	41000	0.84	28000	2100	280	9000
Avro RJ85 / BAE 146-200	1700	290	7200	31000	0.72	4870	2100	290	1820
BAe J31	1300	170	767	23000	230	648	1900	200	291
Beechcraft King Air 350	1600	190	1300	21000	250	850	1500	210	300
Boeing 377 Stratocruiser	1200	200	2500	28000	300	1500	1400	210	800
Boeing 727-200	2100	280	14000	37000	0.80	5500	2100	280	1200
Boeing 737-200	2100	300	9300	35000	0.74	7600	2100	280	3800
Boeing 737-300	2100	300	9300	35000	0.74	7600	2100	280	3800
Boeing 737-400	1600	300	8000	35000	0.74	5200	2100	320	1450
Boeing 737-500	2100	300	8000	35000	0.74	4300	2100	280	1000
Boeing 737-500 Freighter	1500	280	13500	31000	0.75	7000	2500	270	2000
Boeing 737-600	1750	320	7100	37000	0.74	3920	2100	320	900
Boeing 737-700	1900	320	7200	41000	0.76	4100	2100	320	1000

Figure 47: Aircraft Fuel Use Data Table

The items on this table are in the form of the same ones you will find in the Nav 3 and FSNav fuel-use data. Since air files differ, even for the same aircraft model, the best way to get this information for your use is to calculate it yourself. Speeds are in either knits IAS (whole numbers), or Mach (decimal numbers). The speeds shown are the typical speed flown for efficiency, and may not be maximum speed (none are max speed in my files).

Calculating Fuel Use

Look at the total fuel amount right before take-off, then again when you reach cruise altitude. The difference is the total fuel burn for climb. Also take note of average speed (in knots IAS), and climb velocity (in fpm). The fuel burn is in pounds per hour (lb/hr). There is no metric equivalent for this table, it is always in lb/hr. Say it takes you 30 minutes to climb to cruise at FL350 (35,000') at an average of 1200 fpm at an average speed of 270 knots and you used 3600 pounds of fuel.

Climb Rate is **1200.** Climb Speed is **270.** Time in Climb=**30 minutes, or 0.5 hours.** Climb Fuel = Fuel Used/Time in hours = lb/hr. 3600/0.5=**2300 lb/hr**

Cruise Speed is the average IAS in knots OR Mach number. If the number has a period, ACLoader treats it as a Mach number. If there is no period, then it's treated as IAS. Let's say it took you 1 hour to fly 465 nm at FL350 at 0.8 Mach (which is about 465 knots ground speed), and used 1100 pounds of fuel. How do I get the Cruise Fuel? You flew an hour - the cruise fuel is obviously 1100 lb/hr.

What if you fly a shorter time? Let's say 0.5 hours at FL350 with 550 pounds of fuel used. The simple calculation is: Fuel Used in a certain time can be calculated on a per-hour basis. Total fuel used is 550 pounds in half an hour. So 550 * 2 = 1100 lb/hr. So we're at 35,000', at 0.8 Mach, using 1100 lb/hr.

Why am I using hours for time instead of minutes? Because I want the fuel in pounds per hour.
You can do a couple of fuel use tests in a 10- or 15-minute time test once an hour for a good average.
Now do the same for descent fuel.

One item to keep in mind as you descend is fuel use goes up. You have to level out for approach and downwind/base. It could be miles at some low altitude before you descend for final. As you lower flaps and gear and slow further, fuel use will go way up. You may wish to calculate this into your descent fuel use.
And that's all there is to know about that.

Routes Fares/Fees Data Table

Clicking on the "***Routes Fares/Fees***" Main Menu item opens the Route Records Data Table form.

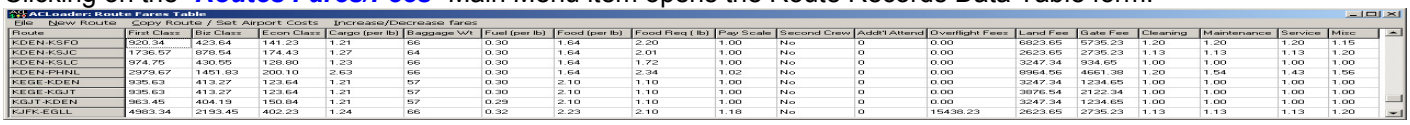


Figure 48: Example of the Routes Fares/Fees Data Table

The data in this table is the same as you find on the Main Form (page 20) Revenue/Cost Report Tab, (page 26) but makes it a lot faster and easier to load an aircraft and generate a revenue report by automating the process.

Some of the following items may be selected from the right-click context menu after selecting any field of the route record you wish to apply the function to. These are denoted on the description with the symbol (CM). One item, "***Change Route Name***" is only on the context menu and allows you to rename that one route.

Table 8: Routes Fares/Fees Data Table items description

SECTION/ITEM	DESCRIPTION
Main Menu	**File**: **Save**: Saves an edited table **Restore**: Restores the Route records as previously saved **Import Route** (page 31): Imports an exported Route Record **Export Route** (CM) (page 31): Exports the selected Route Record **Delete Route** (CM): Deletes the selected Route Record **Edit Route Names** (page 32): Sets route names to changeable so they can be renamed individually. **Change Airport ICAO Code** (page 32): Allows for global changes of ICAO code of all routes that match the code you enter **New Route** (below): Opens a box to enter the ICAO code names of Departure and Arrival airports and creates a new line for editing. **Copy Route/Set Airport Costs** (page 32): Allows for copying of information from one route to another, and allows global setting of costs for departure and arrival airports. **Increase/Decrease Fares** (CM) (page 33): Use a slider or manually increase/decrease fares for selected route. Also available by Right-clicking on that route.
Route	The route name in ICAO Departure–Arrival airport names. This needs to match the format found in the plan files (dddd-aaaa). ACLoader will automatically match this name with the plan to fill in the appropriate boxes on the Main Form (page 20).
Fares	**First Class, Biz Class, Econ Class, Cargo (per lb/kg)**, are the fares charged customers.
Baggage Wt	The total weight of carry-on and checked baggage.
Fuel (per lb/kg)	Cost of fuel per pound or kilo, depending on if you are using Imperial or Metric format.
Food (per lb/kg)	Cost of food per pound or kilo, depending on if you are using Imperial or Metric format.
Food Req (lb/kg)	The amount of food in pounds or kilos, per person required for this flight. The longer the route, the more food you'll need. This includes food and drinks and utensils and napkins.
Pay Scale	Some routes will require more skilled and senior pilots, so the average pay found in the Aircraft Data File is multiplied by this number.
Second Crew	If a flight is over 10 hours, a second flight crew is required. If this is "Yes", then the number of Flight Crew is doubled. Click on this field then press enter to change.
Addt'l Attend	Longer flights may require additional flight attendants. The extra number added to this flight is entered here.
Overflight Fees	If you are overflying other countries, there will be additional cost for ATC and other handling. The total amount is entered here. The cost per country is difficult to find.
Land Fee	Landing fee at the arrival airport. This is scaled by the "Landing Fee Scale" on the Main Form Edit tab. This is *not* on the Revenue/Cost Report tab, only the aircraft's scalar is.
Gate Fee	Fees for arrival gate or stand usage. This is not scaled by anything, so use an average.
Cleaning, Maintenance, Service, Misc	The scalars multiplied to the costs set in each Aircraft Data File at the arrival airport. Costs vary city to city, and country to country.

Using ACLoader Step By Step - Route Record Creation and Editing

Creating a Route Record

Click the "***Routes Fares/Fees"*** main menu item from the Main Form. You will see that we have a route record defined for flying from Denver to San Francisco (KDEN-KSFO), but no record for flying from KSFO to KDEN. One can assume if we have a flight going one direction, there is another one returning.

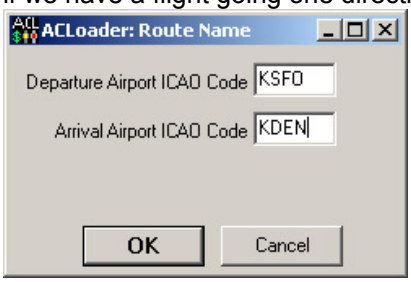


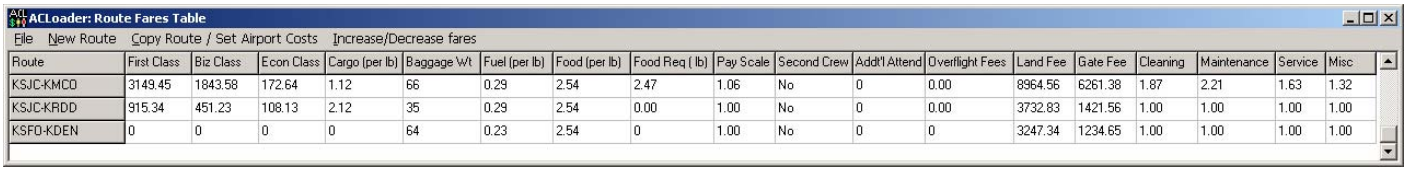
Figure 49: New Route Form

Click "***New Route***". The form to the left opens. Enter **KSFO** into Departure Airport ICAO Code, and **KDEN** into Arrival Airport ICAO Code.

Click "***OK***"

If you try to create a new record with a route name that already exists, ACLoader will warn you and will not allow you to continue. You need to change or delete the previous record, or name the new record with different Departure and/or Arrival airport codes.

The Routes Data Table should now have a new route added to the bottom of the table. Zoom in to take a better look. The new route is ready to be filled in with some fields already filled in for you.



Route	First Class	Biz Class	Econ Class	Cargo (per lb)	Baggage Wt	Fuel (per lb)	Food (per lb)	Food Req (lb)	Pay Scale	Second Crew	Addt'l Attend	Overflight Fees	Land Fee	Gate Fee	Cleaning	Maintenance	Service	Misc
KSJC-KMCO	3149.45	1843.58	172.64	1.12	66	0.29	2.54	2.47	1.06	No	0	0.00	8964.56	6261.38	1.87	2.21	1.63	1.32
KSJC-KRDD	915.34	451.23	108.13	2.12	35	0.29	2.54	0.00	1.00	No	0	0.00	3732.83	1421.56	1.00	1.00	1.00	1.00
KSFO-KDEN	0	0	0	0	64	0.23	2.54	0	1.00	No	0	0	3247.34	1234.65	1.00	1.00	1.00	1.00

Figure 50: Example of Route Table With New Route

These filled-in fields are taken from the first record found with the matching Departure and/or Arrival codes. This means you don't have to remember what you entered into these fields every time you create a new record with either airport.

You can manually enter all the missing information and you will need to if you don't have another record as a reference. But there's a faster method when there are other records with information that's close to the new route.

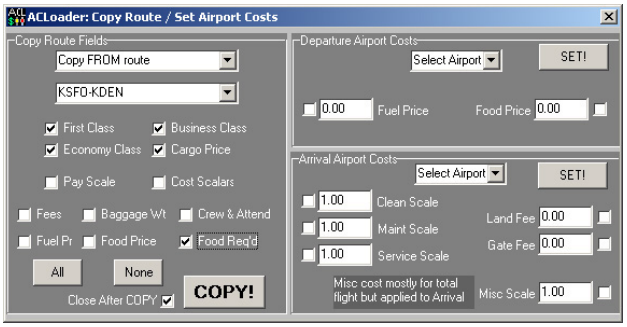
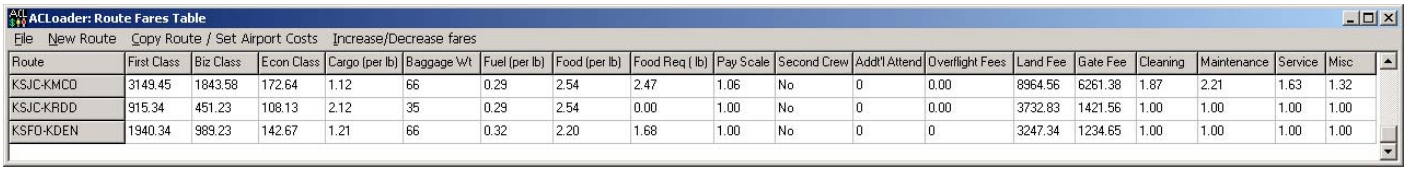


Figure 51: Copy Route Form with New Route

Since all we need to enter are the fares and food required, let's use the the ones from San Jose to Denver. Click the "***Copy Route/Set Airport Costs***" menu item. In the "**Copy Route Fields**" section, our new route, "**KSFO-KDEN**", is already in the "***Copy TO route***" Field. Select "**KSJC-KDEN**" from the "***Copy FROM route***" field list.

Check **First Class, Business Class, Economy Class, Cargo Price** and **Food Req'd**. You don't need to worry about what's checked or not in the Departure Airport Costs, or Arrival Airport Costs sections.

Click "**COPY!**" The fares and food amount are copied from KDEN-KSFO to KSFO-KDEN. The Routes Table now displays everything filled in that needs to be.



Route	First Class	Biz Class	Econ Class	Cargo (per lb)	Baggage Wt	Fuel (per lb)	Food (per lb)	Food Req (lb)	Pay Scale	Second Crew	Addt'l Attend	Overflight Fees	Land Fee	Gate Fee	Cleaning	Maintenance	Service	Misc
KSJC-KMCO	3149.45	1843.58	172.64	1.12	66	0.29	2.54	2.47	1.06	No	0	0.00	8964.56	6261.38	1.87	2.21	1.63	1.32
KSJC-KRDD	915.34	451.23	108.13	2.12	35	0.29	2.54	0.00	1.00	No	0	0.00	3732.83	1421.56	1.00	1.00	1.00	1.00
KSFO-KDEN	1940.34	989.23	142.67	1.21	66	0.32	2.20	1.68	1.00	No	0	0	3247.34	1234.65	1.00	1.00	1.00	1.00

Figure 52: Example of Route Table With New Route Completed

Click ***"File"/"Save"*** from the Routes Fares/Fees table main menu.
This pretty much covers the creation of route records. Now every time you fly San Francisco to Denver you have a record you can use.

There is another method for creating Route Records that's even faster.

Importing and Exporting Route Data Records

From the Route Fares/Fees form, select ***"File"/"Import Route"*** to import a new route, or ***"File"/"Export Route"*** to export a route after selecting the route to export. Route records are not text files and cannot be edited manually outside ACLoader.

You can also export a route from the context pop-up menu (right mouse click) after selecting the route to export.
Try an import and export test. Click ***"File"/"Import Route"***. You will see the file "***KSFO-KJFK.rte***". Double-click it, or click on it and click "***Open***". The route is now added to the list. Now click on the Economy Class seat price (or any field on that line) for KJFK-KSFO. Right click, click "***Export Route***". An open dialog is displayed. Enter a name for the route. I suggest "**KJFK-KSFO**" as the dialog name field already has. You can name the record anything, so if you are flying with a VA or are otherwise going to share this route, you can name it something like "**Milton's Kennedy to San Francisco run**" if you want.

Before exporting, make sure the route you want to export is selected first. This is the same as when deleting or changing fares. To select, click on any number field on any column in the route.

Editing Route Fares/Fees

With the Routes Data table still open, look at the **KDEN-KSFO** line. The scalars are too low. We need to increase them a little. San Francisco is more expensive than Denver and fees are usually applied to the arrival airport.

Click on the box under the "**Cleaning**" column title. Enter **1.1**. Notice the computer beeps at you when you type the decimal point. That's because the decimal point is already there by default (fields have fixed lengths), and scalar fields are only 1 whole number. So you can simply type 1 then 1. Change **Maintenance** to **1.13**, **Service** to **1.13**, and **Misc** to **1.25**.

Click "***File"/"Save"***".

One side effect of making the changes to the KDEN-KSFO record is now KSFO has different scalars. We need to fix it so KSFO has the same costs for every route.

Globally Changing Airport Costs

Click the "***Copy Route/Set Airport Costs***" menu item again. This time we're going to set all the routes data that has KSFO as our arrival airport to have the same information.

Select KSFO in the "**Arrival Airport Costs**" section airport pulldown box (it says "**Select Airport**"). Check all the boxes in that section. The numbers in the boxes are those that ACLoader *last* found for KSFO in the routes table, which is the KJFK-KSFO route we imported. We want to modify everything

Enter:

- **1.1** into **Clean Scale**
- **1.13** into **Maint Scale**
- **1.13** into **Service Scale**
- **6346.22** into **Land Fee**
- **4756.12** into **Gate Fee**
- **1.25** into **Misc Scale**.

Click "**SET!**" ACLoader says that 2 routes have been changed. Close the form.

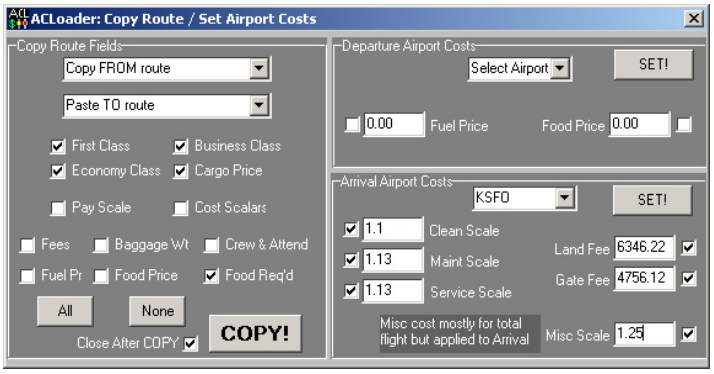


Figure 53: Set Airport Costs for KSFO

Click "***File"/"Save"***". Then close the Routes Data Table form.

If you have the KDEN-KSFO plan loaded, the costs have already been recalculated. All subsequent flights will have the changes we made as well so San Francisco has the same costs regardless of where they depart from. This is what we wanted to do.

You can change individual items on the Revenue tab until you have a profit or loss that you feel is correct for the type of aircraft or distance of flight. When you're happy, you can then change the numbers permanently in the Routes Fares/Fees table like we just did.

Note About Scalars

Scalars work in conjunction with the Aircraft Data File to set the cost of the related fields. The cost base in the data files are multiplied by the Route Record scalars. Landing Fee is just the opposite. Where aircraft have specific costs related to them that may cost more or less at specific airports, Landing Fees are set by the airports. The Landing Fee Scale in the Aircraft Data File is used because landing fees may be increased or decreased depending on the weight of the aircraft.

Restoring the Routes Data Table

If you want to save the table, click "***File"/"Save"***. If you want to delete a route, click on any field in any route (except the name) and right-click then "***Delete***", or click "***File"/"Delete Route"***. Or you can restore the Route Data Table after editing any number of records if you haven't saved. Click "***File"/"Restore"*** and the table will revert back to the way it was when it was last saved. Or you can just close the table and everything you've done will be lost.

Method For Setting Fares/Fees

One good method for setting fees for any type of aircraft we might use on a route is to use a medium-range, medium-sized aircraft, like a 757 or A321, and set the fares and fees until the profit/loss is +/- 1000 with a 70% passenger and 50% cargo load. Then adjust the Overhead fee for each aircraft until the appropriate profit is set. Overhead is discussed in the Creating/Editing Aircraft Data Files section (page 34) below.

Changing Route Names

Up until now the route names have been unchangeable. However, we can change them. Re-open the Routes Fares/Fees table.

If you want to change one or more names, click "***File"/"Edit Route Names"***. The name fields of the table are now editable. When you click on a name, the ACLoader Route Name form opens and you can change the name. You can change any number of names, but remember that ACLoader matches the route names to the plan departure and arrival airport codes in the format **dddd-aaaa**, where dddd is the 3- or 4-letter departure airport ICAO code, and aaaa is the 3- or 4-letter arrival airport ICAO code.

You set the names to read-only again by saving or restoring the table, closing the Routes Fares/Fees table, or clicking on any number field other than the names. This method only allows editing of one line at a time.

Figure 54: Change ICAO Code Form

You might want to change only the departure or arrival part of the route names to another airport. For instance, instead of San Francisco, you have moved your operations to Seattle. You need to change every route with KSFO to KSEA. Click "***File"/"Edit Route Names"***, then in every entry where you see KSFO, change to KSEA.

Okay, that's way too slow. We have planes to fly. To quickly change every instance of an ICAO code (airport name), click ***File/Change Airport ICAO Code.*** This will open a form where you enter the name to change FROM and TO.

For example, KSFO is in the list 4 times if you added the new KSFO-KDEN record and imported the KSFO-KJFK record. We want to move our operations to Seattle. We need to change KSFO to KSEA. Enter **KSFO** in the "**Change airport code FROM**" field. Enter **KSEA** into the "**Change TO**" field. We want to change all occurrences of KSFO, so click "***Both***".

Click "***OK***".

ACLoader changes the route names and tells you how many instances it found, which is 4 in this case.

This feature changes only the Departure, only the Arrival or all instances of an ICAO code (name) depending on which radio button is checked.

Do ***not*** save the table. Click ***File/Restore*** from the main menu.

Increase/Decrease Fares

If you want to change fares on a route without manually changing all the fees (class and cargo),you can do so all at once with the Increase/Decrease Fares option. Like everything else, select the route you want to alter the fares by clicking any number field on that route. Then click "***Increase/Decrease Fares***" from the main menu or by right-clicking and clicking "***Inc/Dec Ticket/Cargo Price***" from the context menu.

Figure 55: Change Fares Form

Select the KDEN-KSFO route. Click on the Economy Class ticket price. Click the menu item as noted above. You will see the following:
Now you can move the slider to increase or decrease all the class-seating ticket prices. If you want to include cargo price in the change, check the box. As the slider is moved, the percentage is displayed and the fares are changed. When you're happy, click "***OK***".

You can also type the percentage to change into the text box to the right of the slider.

Note that decreasing the price by 100% means 0 (zero). But you know that.

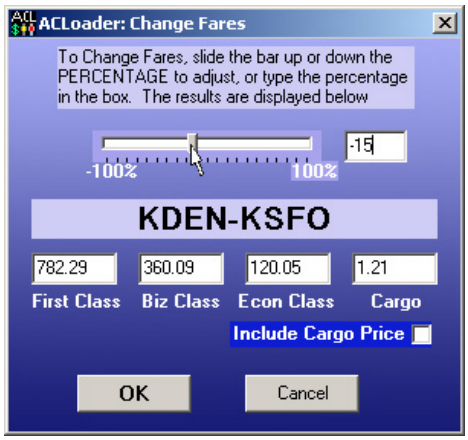


Figure 56: Fares Changed by 15%

Since there's a fare war going on, we need to decrease the ticket prices into San Francisco. Let's decrease the prices by 15%.

Click "***OK***".

You can save the Routes Table or not.

We're done.

Using ACLoader Step By Step – Creating/Editing Aircraft Data Files

Even though it's the last item in the manual, the Aircraft Data Files are clearly the most important item in the program. Everything begins and ends with them. The files themselves are simple text containing all the variables needed by ACLoader to set up a load and calculate a financial report specific to that aircraft and route.

All aircraft are easily exchanged with other users since they are just text files. Once in the ACLoader 4.1\Data Files directory or any sub-directory under it, they are automatically loaded for your use when you run ACLoader.

Even if you are creating a new aircraft, you are editing it. You will start with a supplied aircraft as the base, then make your changes and save as a new file.

Let's create a Piper Saratoga II HP. Everything described in creating this aircraft goes for editing existing ones as well since it's the same steps.

Let's close and restart ACLoader so we're starting fresh.

Select the **Piper Arrow III TC** from the Aircraft Model pulldown and change to the **Seating/Extra Aircraft Info/Editing** tab.

Click "***Edit***"

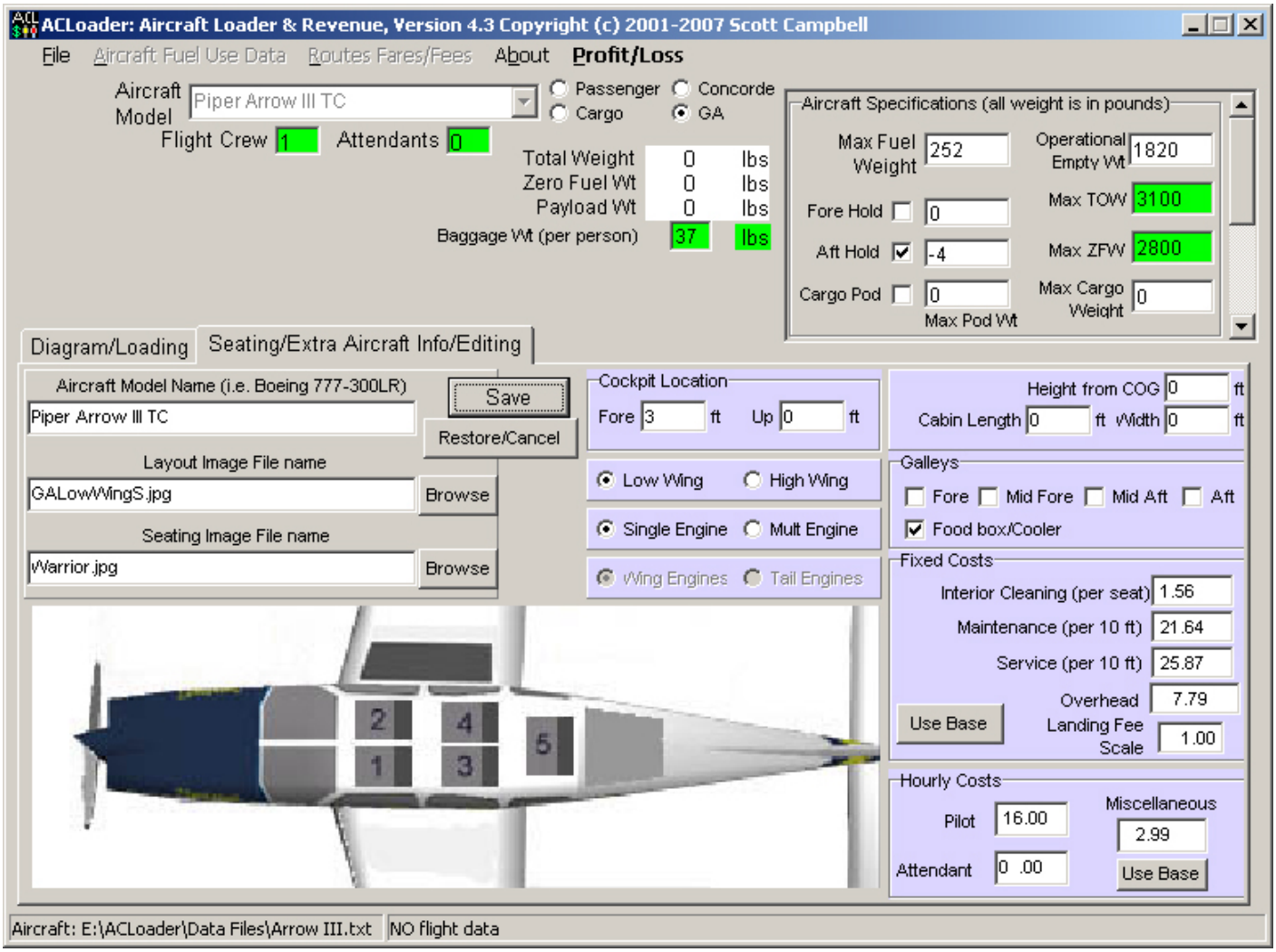


Figure 57: Arrow Selected and in Edit Mode

Everything on the form is now editable.

The first item to change is the Aircraft Model Name. Change this to "**Piper Saratoga II HP**". Next, click the "***Browse***" button next to the **Seating Image File name** field. Scroll until you see "**Saratoga.jpg**" and select that.

Locations To Find Aircraft Specifications

Before we continue, you should know where to find specifications for the aircraft you want to edit or create. The first place to look is the manufacturer's site. For obvious reasons these sites have the best information about their products. Boeing, Airbus, Piper, Cessna, Bombardier, etc. all have sections detailing their aircraft's performance and specifications. Sometimes the manufacturer's data is a little difficult to read, but if you take the time you will find the data you are looking for. If you can't find exactly what you're looking for, do a web search. Sometimes there are sites with a lot of detailed information for new and old aircraft. If nothing else, go to your local public library and look up a "Jane's All the World's Aircraft" for a year the aircraft was manufactured. These books have all the details of every aircraft ever made. For Boeing, try the Boeing Technical Manuals Site page. Technical manuals are very complicated to read, but once you get a hang of it, it makes it easy to get accurate fuel use and weights and everything you need. Airbus is generally good at putting everything you need on each aircraft product info page.

Using Aircraft Manufacturer's Data

We'll be using the data from Piper's Saratoga pages to make the data file. We start on the Aircraft Specification panel on the Main Form top and move down. In each field, enter the listed number. All weights are in pounds and distances are in feet. Metric is in parentheses if you are using Metric.

- Max Fuel Weight **612 (277)**
- Fore Hold and Distance **CHECKED** and **0**
- Aft Hold and Distance **CHECKED** and **0**
- Cargo Pod **UNCHECKED**
- Operational Empty Wt **2396 (1087)**
- Max TOW 3600 (1633)
- Max ZFW 3158 (1432)
- Max Cargo Weight **0** (by and large there's no cargo on GA's, just baggage). As a note, the Saratoga's specs say that the forward and aft baggage holds can have up to 100 pounds of baggage each.

How Do I Calculate MZFW?

Maximum Zero Fuel Weight, or MZFW, is a complicated calculation and can only be provided by the manufacturer. Hopefully the manufacturer's site lists the typical MZFW. Unfortunately, they usually don't. Why? Because this can vary with the way aircraft are configured. But we can calculate it most of the time if Maximum Payload Weight is given. Since MZFW is usually Operational Empty Weight plus Maximum Payload Weight, it's easy to figure. In the case of the Saratoga, Piper does not provide MZFW nor MPW. They do list Standard Useful Load as 1204 lbs/546 kg which is not terribly useful. 1204 lbs is simply MTOW minus OEW.

For our uses, put 2650 into MZFW.

Finishing the Saratoga

Scroll the Aircraft specification panel down and continue entering the following data.

- Cabin Length **10 (3)**
- Cabin Width **4 (1)**
- Rows **4**
- Seats **6**

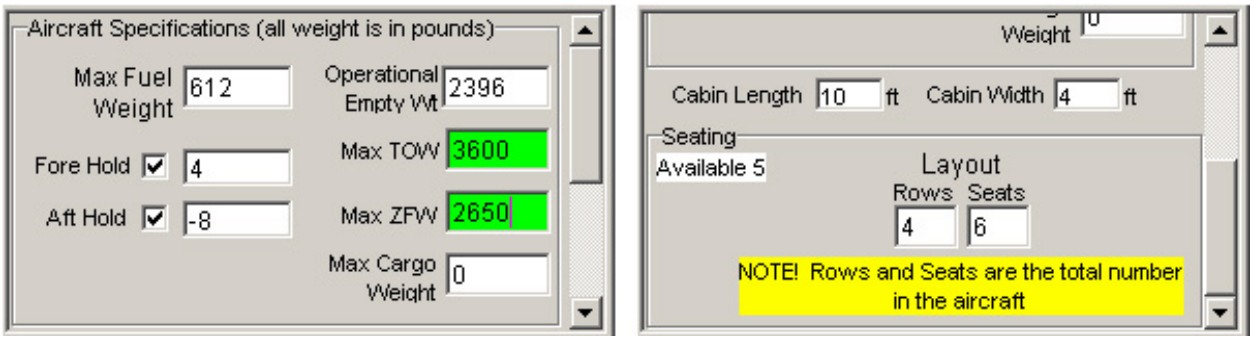


Figure 58: Saratoga Specifications Panel

You can leave everything else as is, or if you want to make any changes in the cost sections go ahead and do so. Since a Saratoga is more expensive than an Arrow to maintain, you should increase some of the costs. Enter 24.59 into Maintenance, 42.87 into Service, and 139.67 into Overhead. Put 0.5 into Landing Fee Scale. However, if all you're planning to do is fly this aircraft into small or medium-sized airports, you may wish to leave it as 1.0. It's also a good idea to increase the pilot's salary, although with a GA, you are most likely the pilot. However, enter 31.23 into Misc (in the hourly costs section).

Click "**Save**". ***PAY ATTENTION!*** The Save Dialog displays "**Arrow III TC.txt**" in the file name. You ***don't*** want to save as that file name. Replace the file name with "**Saratoga II HP**" and click "***Save***".

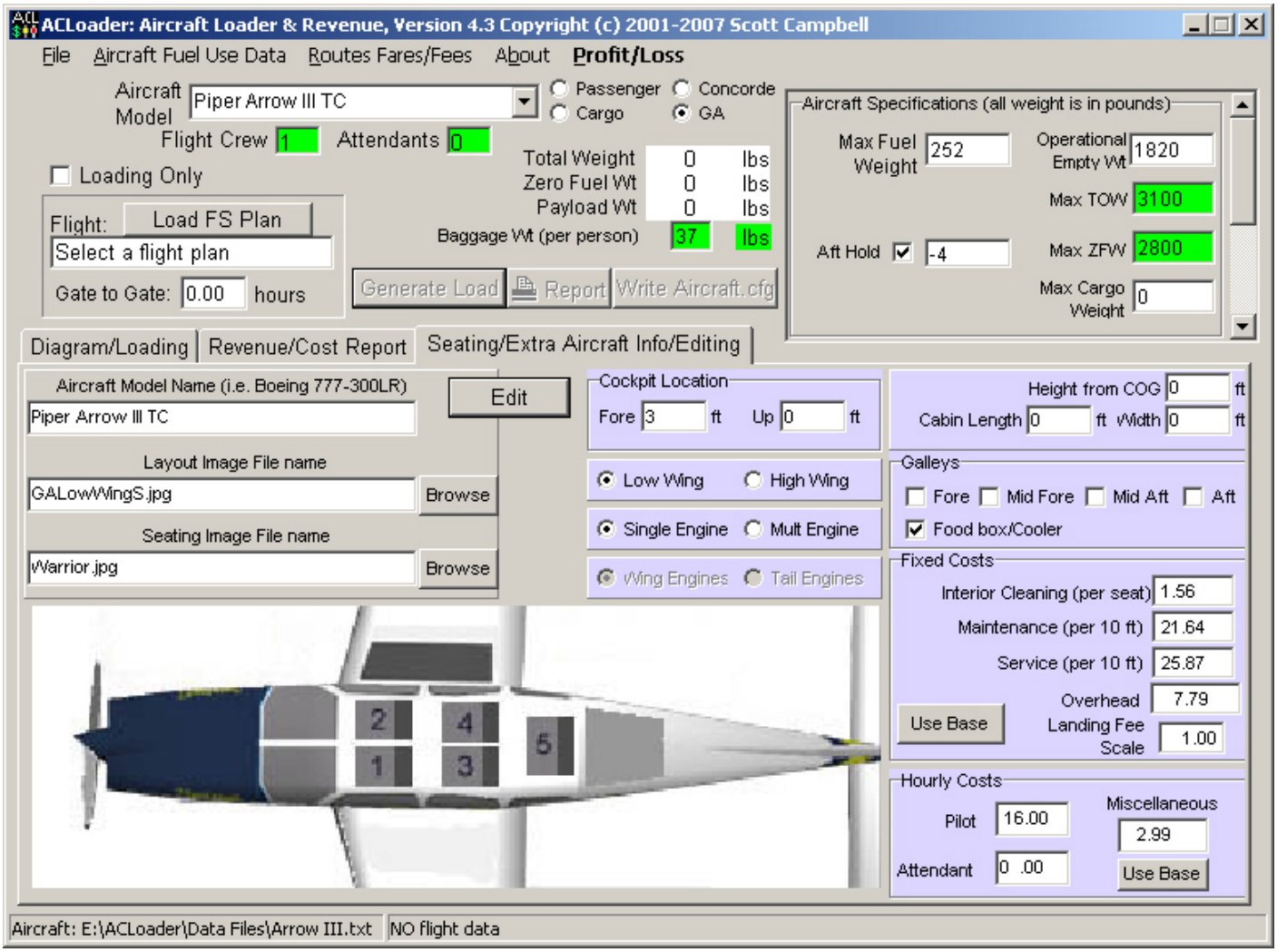


Figure 59: Saratoga After Saving

Don't start loading up yet. You're only half done making the Saratoga Aircraft Data File.
Click "***Aircraft Fuel Use Data***" on the Main Menu (on the top of the form if you need a refresher). Scroll down to the next to the last record and you'll see "**Saratoga II HP**". It has all the Arrow III info. We need to change that.
For the Saratoga II HP, enter into each field listed:

- Climb Rate: **950**
- Climb Speed: **130**
- Climb Fuel **142**
- Cruise Alt: **14500**
- Cruise Speed: **140**
- Cruise Fuel:**75**
- Descent Rate: **1100**
- Descent Speed: **160**
- Descent Fuel: **42** (already set)

Now click "***Save***" on the Main Menu.

Close the form. You're done.

Simple, no? And that's all there is to creating and editing an Aircraft Data File. Well, almost everything.

Making Seating Maps and Layout Images

When you make a new Aircraft Data File you will probably want a seating map. These are usually available from airline booking sites, manufacturer sites, or generally on the net. You'll find the seating map on the **Seating/Extra Aircraft Info/Editing** tab (obviously, since you just used one for the Saratoga).

Seating Maps

The format of the image is either JPG or BMP and has the ratio of 3:1 (360 pixels wide by 120 pixels high is the smallest I'd recommend). You can make the image any size you want, but it'll be set to those proportions. A lot of the default ACLoader seating maps can be fairly large.

Seating Maps are only for your reference. ACLoader does not use them. So make them any way you desire.

Layout Image

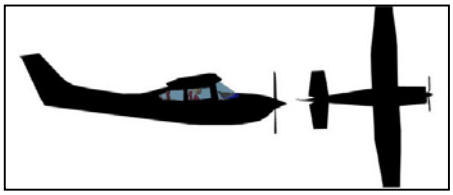


Figure 60: GA Layout Image

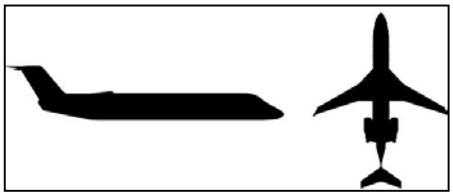


Figure 61: Small Jet Layout Image

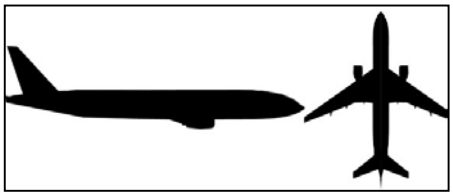


Figure 62: Large Jet Layout Image

The layout image is something to pay special attention to. If you need an image to represent your aircraft type that doesn't already exist, you may want to make one.

The size, proportion, and position of the aircraft silhouettes of the layout image are very specific. ACLoader uses the information in the Aircraft Specification and Extra Aircraft Info sections to determine where to place the displayed passenger and cargo loads, galley positions, and attendant locations. If the image is not right, these fields will look out of place.

The general size of the images provided is 580x240, but like the seating map, can be any size as long as it's proportions are 29x12.

Each silhouette of the profile must match the location of any of the supplied images. In other words, if you are making a new GA layout image, the side and top image sizes must match the side and top image sizes of your reference image.

When making a layout image, use whichever default most closely looks like the one you are making along with the one that is closest to the cabin length of your aircraft. The one thing you need to know is that the GA layout images all have the top silhouette facing the same way as the side silhouette (tail to front). With Passenger and cargo layout images, the top silhouette faces up. The following images are examples of the different layout types based on the corresponding cabin lengths and aircraft type.

There are a bunch of layout images included with ACLoader for specific aircraft and general aircraft types. The specific images are used for the specific aircraft data files. The Boeing 377 Stratocruiser is a good example. If a supplied aircraft is unique enough, it was given its own file.

Layout images, unlike seating maps, are found in the main ACLoader 4.1 directory. I did this to separate out the layout images from seating maps of the same name.

To make a new Layout image, pick a supplied aircraft with the same type and cabin length as the aircraft you're making. Look at the layout image name from the Seating/Extra Aircraft Info/Editing tab. Use that as a template.

Next, go into Flight Simulator, or get yourself a 3-view diagram of the aircraft. In Flight Simulator, snap a screen shot from the side profile and the top. I go into slew mode and raise the aircraft several thousand feet in clear weather then snap a shot (Alt-Print Screen). Then I just bank the aircraft (7/Home or 9/PgUp key) until the tail is level with my view.

Run your image editor and load up the saved images and selected layout template. Cut the saved profile images out without the background and lay them onto the template silhouettes, sizing them to fit. Then remove the template images and paint the cutout images black to make the silhouettes. The images below display the Baron with the GALowWingS.jpg image as the template. Note how the Top view is only half the image, which is good to make sure it's level and straight. Then the top profile was mirrored to the other side.

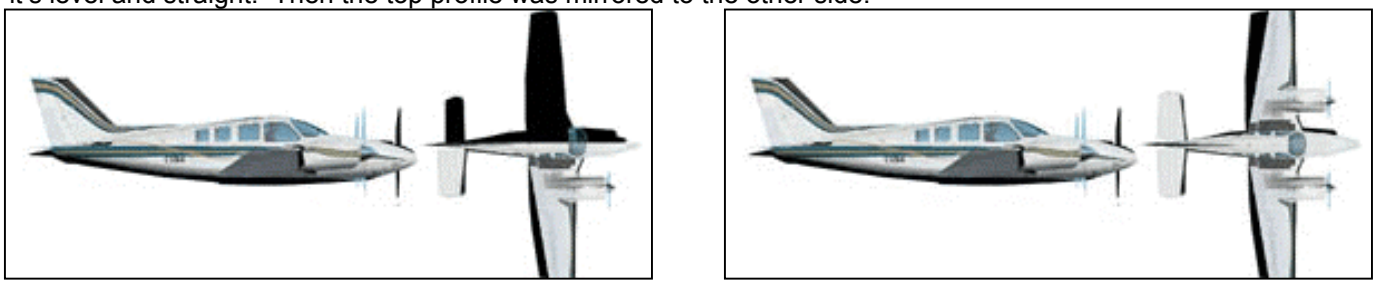


Figure 64: Making the Low-wing Multi-engine Layout Image

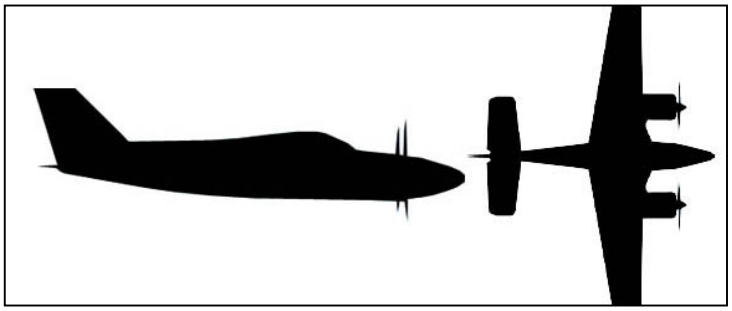


Figure 63: Completed Low Wing Multi-engine Layout Image

Finally, I took out the background and filled everything in black.

I saved as GALowWingM.jpg (M for multi-engine). When you load the image into ACLoader, if it's not exactly placed, or the load/cargo information looks out of place, you can load the image back into your editor and adjust it accordingly. The side profile image of the "GALowWingM.jpg" picture needed to be moved up a bit so the front passenger seat box fit.

That's all you need to know about making layout images.

Using the Right Layout Image

As a final note, what happens if you don't use the right layout image for the aircraft type and size? Below is an example (exagerated that it is) of the Boeing 747-400 with the Small2Tail.jpg image.

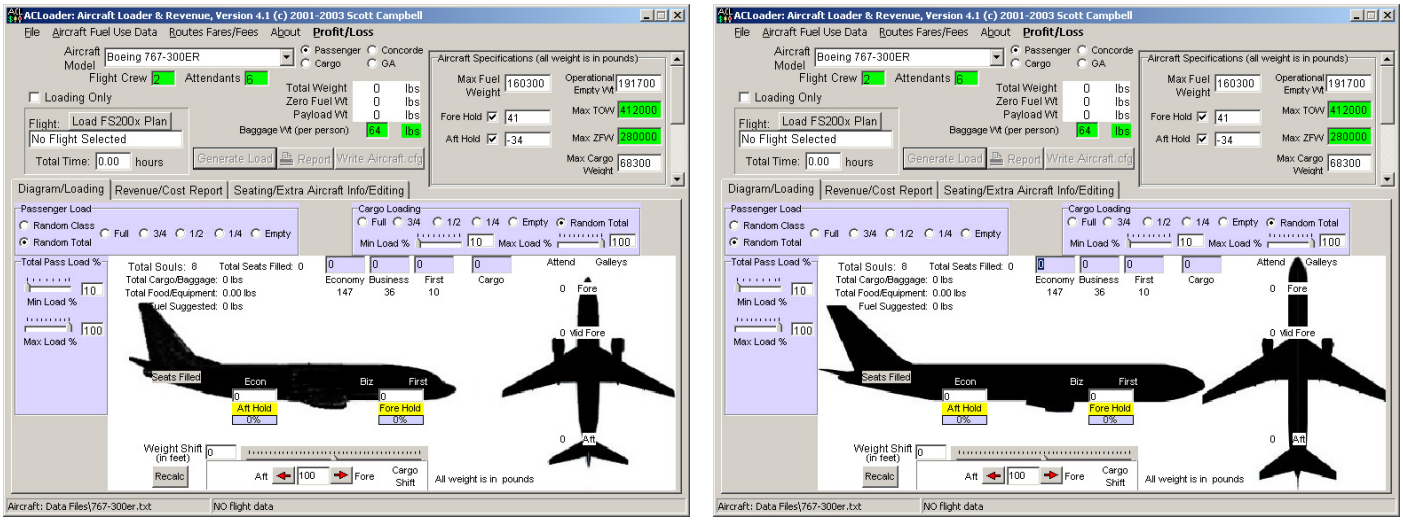


Figure 65: 767-300 with Wrong and Right Layout Image

Clearly it matters that you use the right layout image for your aircraft. Even though the 737-300 layout image on the left looks okay, the load information is outside the image. Everything fits correctly with the Large2WingWide image on the right.

Seating and Cargo Hold Placement

The numbers to the right of the Fore and Aft cargo hold check boxes is where they are located relative to the Cog of the aircraft. When you place a 0 (zero) into them, ACLoader calculates their positions when you select the aircraft as

being: between the CoG and cockpit location, and between the Cog and aft bulkhead. You can move these locations if you are consistently getting everything loaded into the fore or aft holds and want the load better distributed.

Go into Edit mode and enter any number you wish into either field. Save and re-generate a load ("G***enerate Load***" button). If things still don't look right, try moving the holds one at a time until the cargo/baggage load looks right. The distance is in ***FEET*** fore (+) and aft (-) even if you are using Metric. Yes, there's a reason for that.

Upper, Lower, and Main Decks

A Main Deck is the one in the center of the aircraft, typically where you enter the plane. A 747 and A380 have Upper and Main decks. The Boeing 377 Stratocruiser has a Lower and Main deck. In the Seating/Extra Aircraft Info/Editing tab you'll see "Upper Deck" defined, but it is -8 feet, making it a Lower Deck. When you generate a load and view the reports, all seating and whatnot refer to the Main and Lower decks. The 747 and A380 refer to Upper and Main decks. I highly recommend you ***do not*** put a cockpit on a lower deck. Cockpits should only be placed on the Main ir Upper deck. There is no way to have an Upper and Lower deck at the same time.

Conversion Calculator

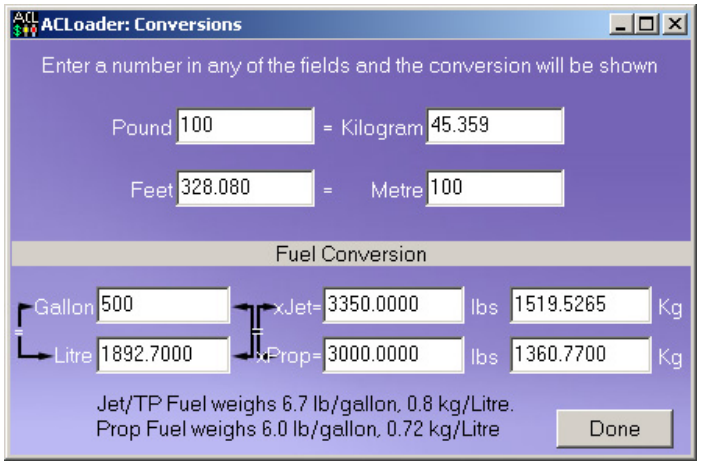


Figure 66: Conversion Example 1

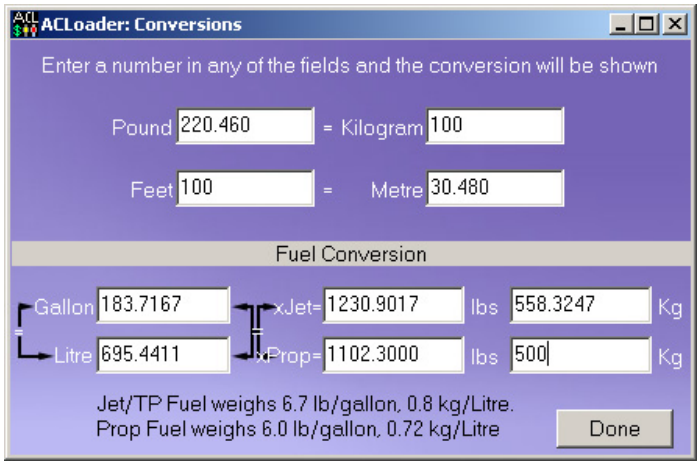


Figure 67: Conversion Example 2

This calculator is provided for a simple way to convert from Imperial to Metric and vice-versa, as well as from pounds/kilos to gallons/liters, and vice-versa. It is especaiily good at converting gallons to pounds, which is very helpful when making/editing Aircraft Data Files.

Conversion Example 1: converts 100 pound to kilos, and 100 metres to feet. The fuel/weight calculation has 500 gallons entered. This converts across the form to all the various fields. Note that jet fuel weight is set to 6.7 pounds/gallon (0.8 kg/litre), and prop fuel weight is set to 6 pounds/gallon (0.72 kg/litre). There is no way to change this.

Conversion Example 2: converts 100 kilos to pounds, and 100 feet to metres. The fuel/weight conversion calculator has 500 kilos entered into the prop fuel weight. This converts backward across the form to pounds, then to gallons and litres. You can ignore the jet fuel weight above since it's converting from the gallons that is calculated.

And that's all you need to know about ACLoader. Take your time. Learn all the features. Play around. You can't break anything as long as you make backups before making a lot of changes.
Enjoy your experience, and happy flying.