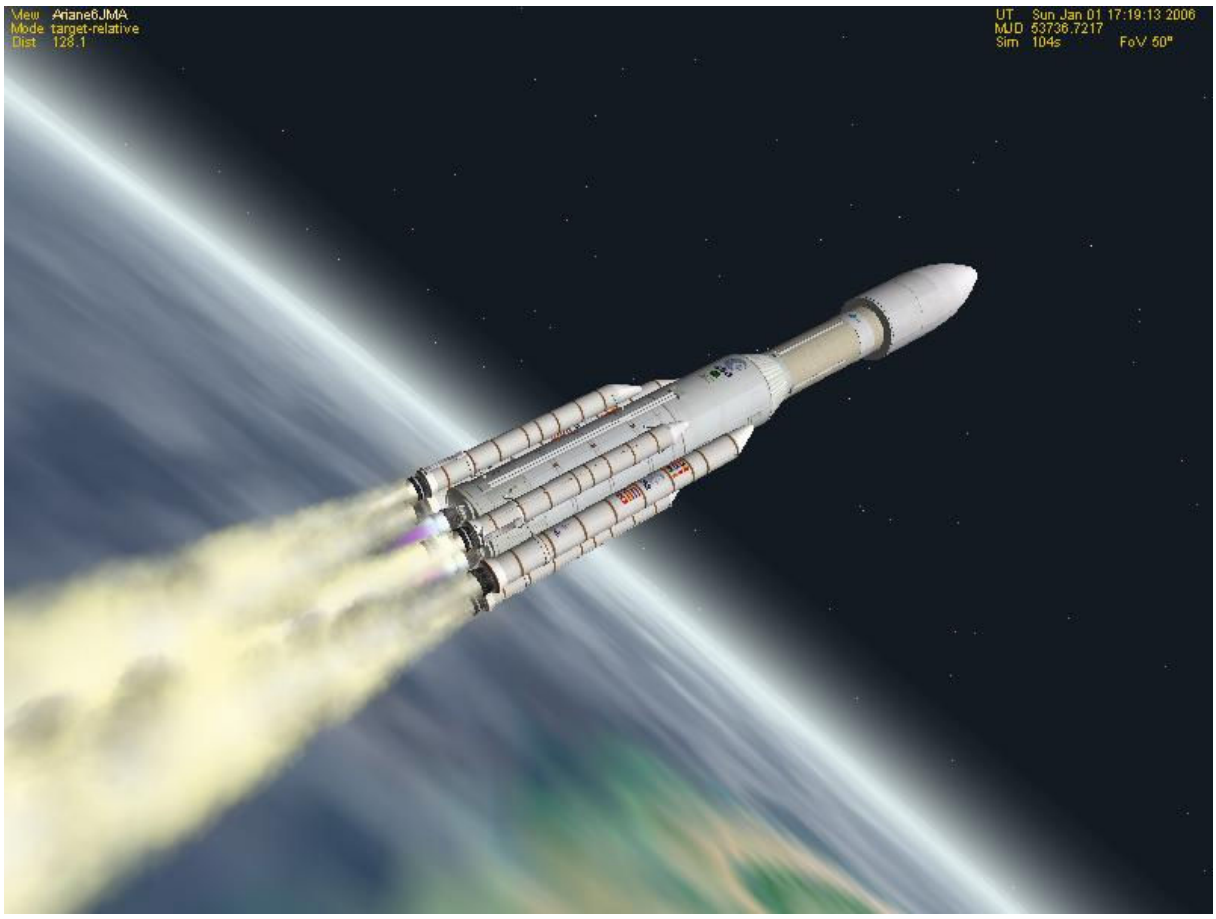
Ariane 6

By Jekka & Momo

With help from AndyMC for the translation



1. Introduction

The ARIANE 6 is a fictional heavy launcher for the European Space Agency. Note that no project of the European Space Agency mentions these rockets anywhere. They were conceived by us to lift the heavy loads required for Interplanetary space flights, and as well to lift very heavy loads to low terrestrial orbit

2. Installation

This addon was built and tested in **Orbiter 2006, patch 1.1**. To install it, decompress the package to your Orbiter directory by keeping the file hierarchy. The necessary addons - **spacecraft3** and **multistage** by Vinka are also included in the pack. (http://users.swing.be/vinka)

The addon 'Inflatable' by No matter is also necessary for one scenario but is not included. (http://orbiter.mustard-fr.com)

The following additional addons are not necessary for the operation of the ARIANE 6 but are highly recommended:

Orbitersound 3.0 by Dansteph (http://orbiter.dansteph.com/index.php)

Kourou-CSG by Mustard & Papyref (http://orbiter.mustard-fr.com)

To avoid possible bug of posting, it is recommended to choose **color depth**: **32** in the **Video Tab** of the Orbiter launch panel.

3. Contents

Launchers

- Ariane 6A
- Ariane 6B SF – Short Fairing
- Ariane 6B LF – Long Fairing
- Ariane 6C

Infrastructures

- Pad Zl4
- VAB Ariane 6

Payloads

- Hera
- Zoe
- Grav1
- Eden

4. Description

Lanceurs

Ariane 6A

ARIANE 6A measures 105m in height. It has two stages, four simple booster rockets and two large booster rockets. It is able to place up to 250 tons into low terrestrial orbit. Its mission is above all, is to place super-heavy and very bulky loads into terrestrial orbit.

Commands :

J : Separation of the stages/booster rockets
F : Separation of the fairing
P : Autopilot

Ariane 6B

ARIANE 6B comes in two versions: a Short Fairing version (SF), which measures 97m in height, and a Long Fairing version (LF) which measures 104m in height.

Ariane 6B LF

Ariane 6B SF

The two versions have characteristics similar to ARIANE 6A, but are intended for launching heavy interplanetary loads. To do this they have a third stage of the 'fregat' type called “ZephirG”, with which to make trans-orbital injections.

Commands :

J : Separation of the stages/booster rockets
F : Separation of the fairing
P : Autopilot

Ariane 6C

ARIANE 6C measures 81m in height. It can place up to 150 tons in low terrestrial orbit. Its mission is above all, to place super heavy and very bulky loads into terrestrial orbit. It has one first stage, four large booster rockets and a second stage of the 'fregat' type called “ZephirG”, for orbital operations.

Commands :

J : Separation of the stages/booster rockets
F : Separation of the fairing
P : Autopilot

For the launching of Zoe+Grav1, press key “J” two times for correct deployment.

Infrastructures

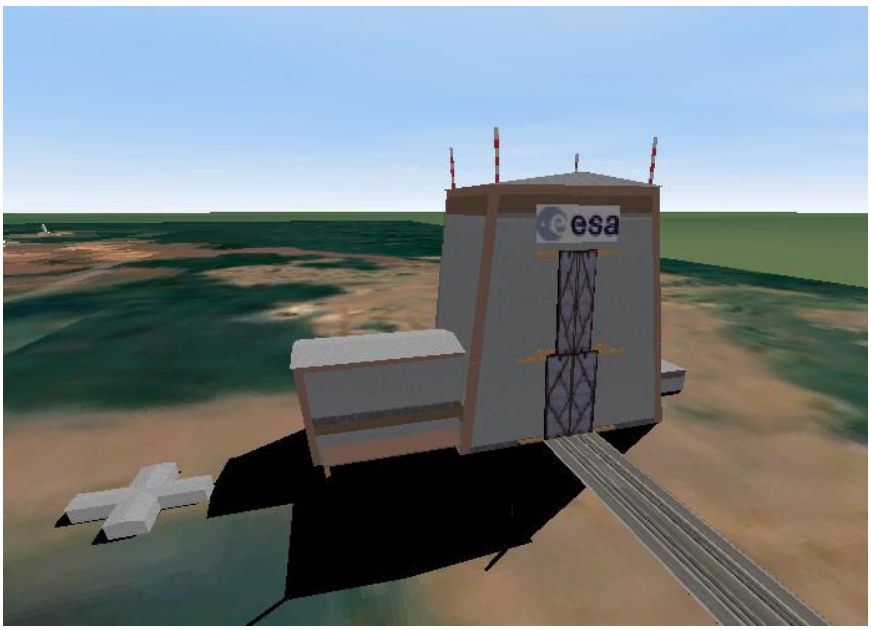
Pad Zl4

The pad Zl4 is an addition to the space complex Kourou-CSG. It is intended for the launching of the ARIANE 6 family of launchers.

Commands :

G :	Withdraw filling arms
Ctrl+ "+" [Pav Num] :	Lights ON
" * " [Pav Num] :	Light OFF

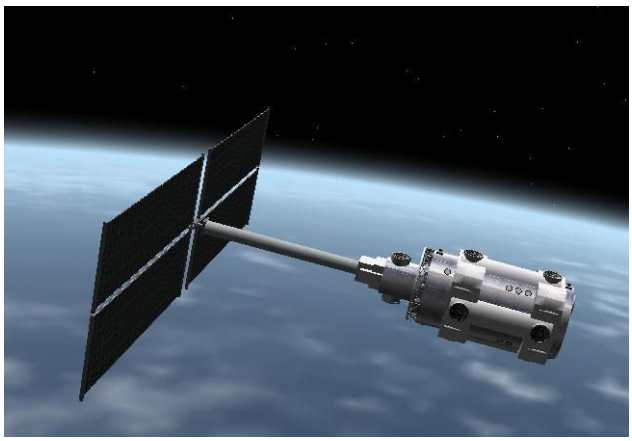
VAB Ariane 6



The VAB (Vehicle Assembly Building) is the integration building for the assembly of the ARIANE 6 family of launchers

Charges utiles

Hera



Hera is a high capacity central station module. Its mass is 200 tons. It has 12 docks..

Commands :

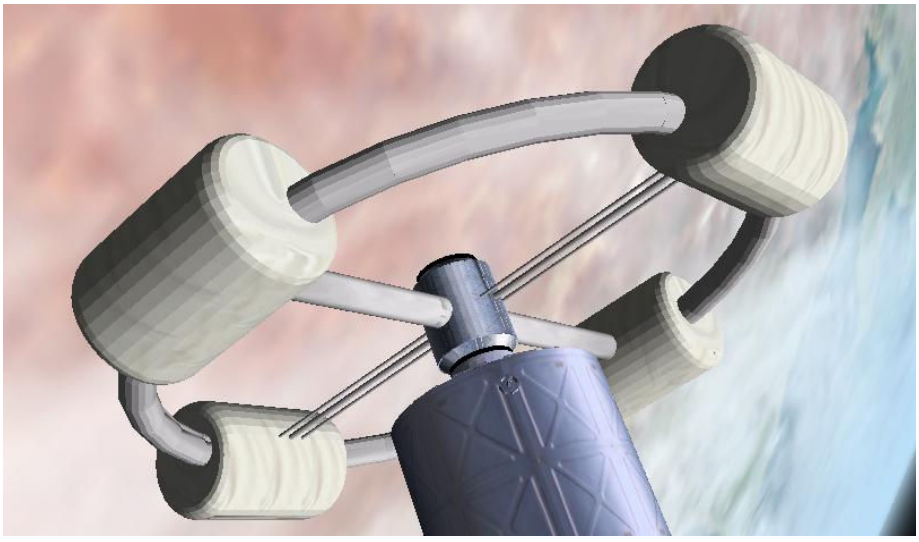
It is controled like a standard spacecraft

K : Solar pannels déployment

Zoe

Zoe high capcity habitation module habitation de grosse capacité. Its mass is 100 tons. It has2 docks. **When you are in docking approach, press "j" just before the contact to depoloy it and dock it correctly.**

Grav1



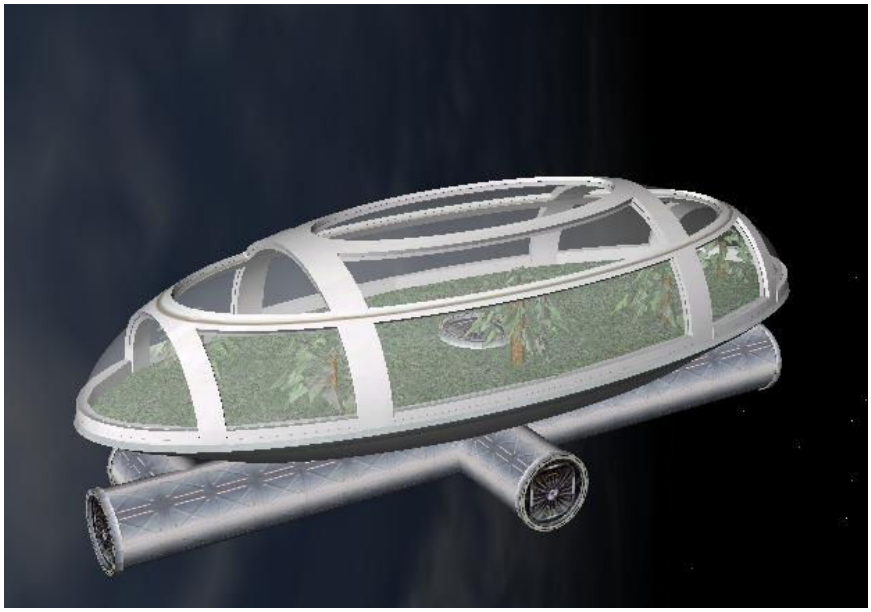
Grav1 is an experimental artificial gravity module.. Le diametre of the ring is 20m. Once the rotation is engaged, it is impossible to stop it. **When you are in docking approach, press "j" just before the contact to depoloy it and dock it correctly.**

Commands :

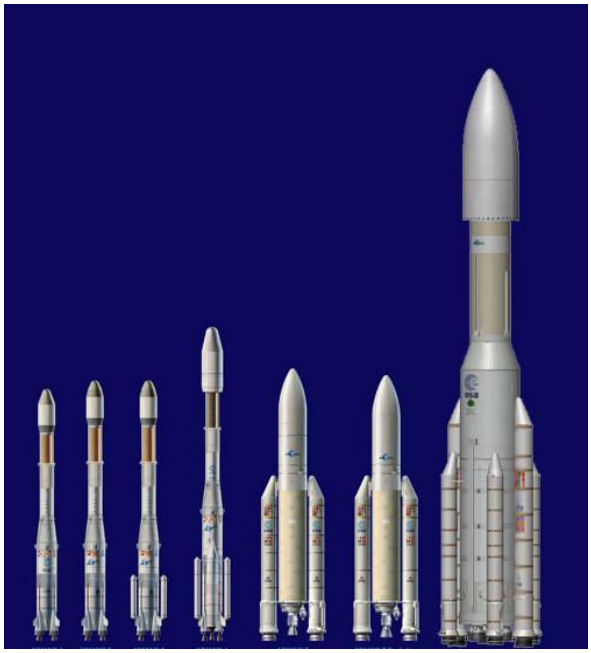
G : Ring deployment
K : Rotation

Note : If you stop the rotation the your retract the ring, some animations bugs could appear.

Eden



Eden is an experimental orbital garden module. Its mass si 100 tons. **When you are in docking approach, press "j" just before the contact to depoloy it and dock it correctly.**



5. Scénarios

A few missions are available with the different versions of Ariane 6. Here is a short description of the included scenarios . You can of course add some stations or modules to these missions.

Simple launching of modules

- A6A+Hera.scn	Launching of Hera with ARIANE 6A
- A6BSF+Inflatable.scn	Launching of Inflatable with ARIANE 6B SF
- A6BLF+Zoe.scn	Launching of Zoe with ARIANE 6B LF
- A6C+Eden.scn	Launching of Eden with ARIANE 6C
- A6C+Zoe.scn	Launching of Zoe with ARIANE 6C
- A6C+Zoe+Grav1.scn	Launching of Zoe and Grav1 with ARIANE 6C

Assembling a station

- A6AHera-1°vol.scn	These scenarios are proposed to you to help you assemble your own station with modules in the package. Launch the scenarios in the order of the flights..
- A6CEden-2°vol.scn	
- A6Czoe-3°vol.scn	
- A6CZoe+Grav1-4°vol	
- exp fin 4° mission.scn	

Scenarios for the addition of payloads

- A6A+xxx	These scenarios are the standard files for the addition of payloads. (see chapter 6) ***They are not functional .scn files in a condition to use***
- A6BSF+xxx	
- A6BLF+xxx	
- A6C+xxx	

6. Addition of payloads

Proceedure to be followed

To put a payload on the launcher, a series of standard files have been created to facilitate the task for you :

Here is a procedure, for example, detailing the addition of the module **Inflatable** (by No matter) on ARIANE 6BSF..

1. In the folder ***Orbiter 2006/Config/Ariane6JM*** copy the files **A6BSFxxx.cfg** and **A6BSFxxx.ini** and rename them respectively **A6BSFInflatable.cfg** and **A6BSFInflatable.ini**.

2. Open the **A6BInflatable.cfg** file and replace the name of *ClassName* with that of your new file like this :

   ```
   ClassName = A6BSFxxx
   Module = multistage2
   ```

   becomes

   ```
   ClassName = A6BSFInflatable
   Module = multistage2
   ```

3. Open the **A6BSFInflatable.ini** file. Replace the xxx of “MeshName” with the name of the mesh of the 'Module', and that of “Module” by the name of its config file and name which you want to give it. If the mesh or the config file is in another folder, you must write the access path to that file.

   ```
   [PAYLOAD_1]
   off=(0,0,61)
   MeshName="xxx"
   Module="xxx"
   name="xxx"
   Diameter=7.
   Height=15.
   Mass=50000.0
   ```

   becomes

   ```
   [PAYLOAD_1]
   off=(0,0,61)
   MeshName="Inflatable"
   Module="Inflatable"
   name="Inflatable"
   Diameter=7.
   Height=15.
   Mass=50000.0
   ```

4. In the folder ***scenarios/A6JM*** copy the **A6BSF+xxx.scn file** and rename it to **A6BSF+Inflatable.scn**. Open it and replace the names of the files with those which you have just created.

```
Ariane6JMB:Ariane6JM\A6BSFxxx
  STATUS Landed Earth
  POS -52.5799820 5.0617590
  HEADING 90.00
  PRPLEVEL   0:1.000   1:1.000   2:1.000   3:1.000   4:1.000
5:1.000
  NAVFREQ 0 0
  CONFIG_FILE Config\Ariane6JM\A6BSFxxx.ini
  GUIDANCE_FILE Config\Ariane6JM\A6Bzoe.txt
  CONFIGURATION 0
  STAGE_STATE 2
  STAGE_IGNITION_TIME 0.000
  CURRENT_BOOSTER 1
  CURRENT_STAGE 1
  CURRENT_INTERSTAGE 1
  CURRENT_PAYLOAD 1
  FAIRING 1
END
```

Becomes :

```
Ariane6JMB:Ariane6JM\A6BSFInflatable
  STATUS Landed Earth
  POS -52.5799820 5.0617590
  HEADING 90.00
  PRPLEVEL   0:1.000   1:1.000   2:1.000   3:1.000   4:1.000
5:1.000
  NAVFREQ 0 0
  CONFIG_FILE Config\Ariane6JM\A6BSFInflatable.ini
  GUIDANCE_FILE Config\Ariane6JM\A6Bzoe.txt
  CONFIGURATION 0
  STAGE_STATE 2
  STAGE_IGNITION_TIME 0.000
  CURRENT_BOOSTER 1
  CURRENT_STAGE 1
  CURRENT_INTERSTAGE 1
  CURRENT_PAYLOAD 1
  FAIRING 1
END
```

5. Launch the scenario in Orbiter. **During separation of the 2nd stage** (deploying of the ZephirG stage with the module), **press "J twice" quickly**

   If the payload is **asymmetrical**, use **kill rotation** (touch 5 on the numeric keypad) in the event of prolonged thrust with the main engine to cancel any rotation of the unit..

For operation in **translation** with the stage '**zephir**' carrying with it a module other than those provided, use **Kill rotation** (touch 5 of the numeric keypad) quickly after each use, aiming to cancel rotation and to keep a rectilinear trajectory.

Note

- If the payload uses DLL modules of the type **spacecraft** (1, 2 or 3), as in point 3, replace the xxx by spacecraft/spacecraft3 (or adapt consequently)

  Example with Modarm (by papyref) :

```
[PAYLOAD_1]
off=(0,0.45,37)
MeshName="modarm"
Module="Spacecraft\Spacecraft3"
name="Modarm"
Diameter=7.
Height=15.
Mass=50000.0
```

- According to the payload that you intend to launch, you must modify its vertical position on the launcher. This adjustment is done in the A6BInflatable.ini file in our example :

```
[PAYLOAD_1]
off=(0,0,61)   <- 61 = 61m from the bottom of the launcher
MeshName="Inflatable"
Module="Inflatable"
name="Inflatable"
Diameter=7.
Height=15.
Mass=50000.0
```

  It is necessary to finely adjust the height of the payload so as not to have a problem with the release.

- To launch a payload with **ARIANE 6C**, proceed as before by using the **A6Cxxx** files. And for ARIANE 6A by using **the A6Axxx** files

7. Creation of payloads for Ariane6JM

If you want to create payloads, the 3ds files of the stages 'ZephirG' and 'ZephirT' are included in the package.

They make it possible to add modules in the same way that we did it if you do not wish to add them like the other standard modules. We will not detail our method here. We invite you to look at the structure of the files to understand the strategy used.

Note : you have to re-scale the 3ds. (about 10x)

8. Thanks

We make a point of largely thanking Mustard, Well, Papyref and No matter for agreeing to share their work with us in regard to most of textures and some meshes. That significantly helped us with the task. We invite you, if we have not already done so, to download their different addons from .**http://orbiter.mustard-fr.com**.

Thanks to all of the French-speaking community on the Orbiter forum on the site - **http://orbiter.dansteph.com** . Thanks for its support and its encouragement which pushed us to give the best of ourselves. Thanks to Dansteph for this site and this forum!

We don't speak english very well, so here is a special great thank for **AndyMc** for his help for the translation of the present doc. Thank you Andy for the time you spent on it ! If you find some mistake, you can send me the correction at sebastien@acetone.ch

Jekka & Momo, april 2007