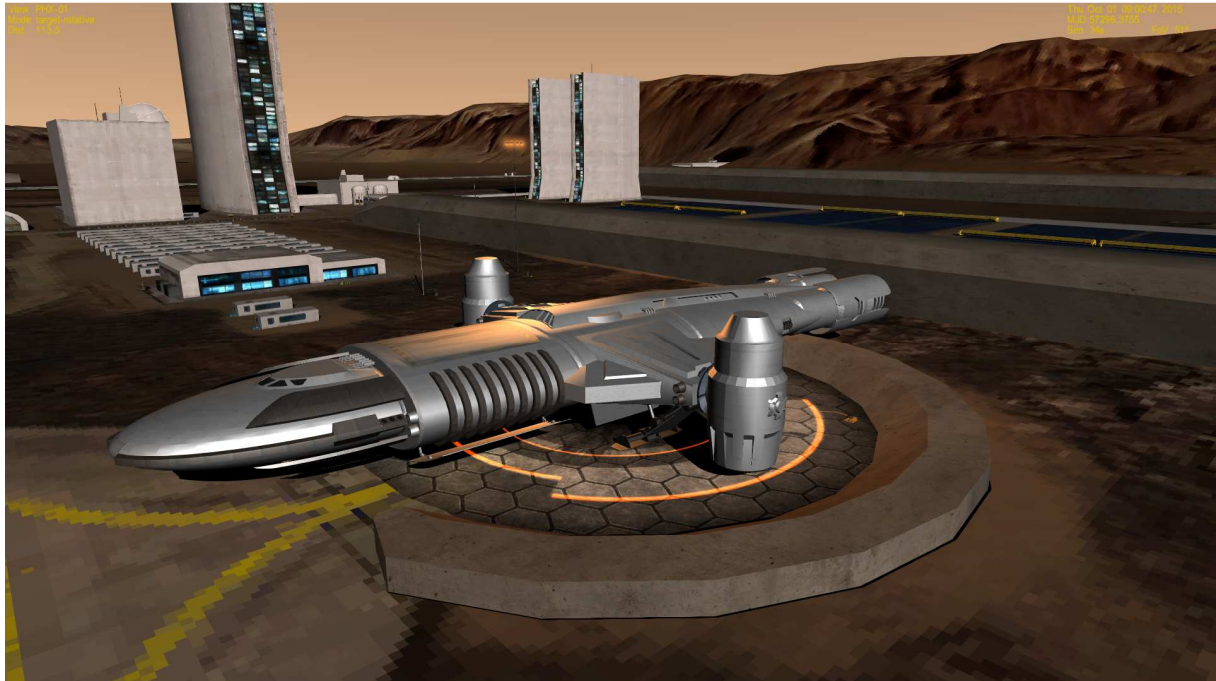


# „Phoenix“ Star - Clipper

Multi-role medium freighter

Release Version 0.97 beta (WIP)

## Captain's Manual



Parked at Orcus Patera



### **Main Features:**

- Powerful plasma acceleration engines and very-high-ISP ION - Drive
- rotating Auxiliary Engines providing strong main-, retro- and hover - support
- advanced Flight assistance system ('aFAS') for easy handling
- Cargobay with 24 UCGO slots and functional MagLift® for special cargo attachment
- MagPad® Shuttle attachment System - can land with dingi in shuttlebay
- front orthoaxial dockport
- basic UMMU (up to 12 crew) and UCGO support
- active Virtual Bridge
- very basic damage system
- some eyecandy – lights, streams etc..., multiple lightsources recommended
- very basic documentation ...

### **Concept:**

In the beginning this craft was a proof-of-concept for the MagPad System, allowing to “land” a Shuttle or Fighter craft in its bay while landed. The MagPad system is basically a workaround for the orbiters missing ability to land with a docked craft. It was primarily designed for the F-224 “Firehawk”, but you can attach any craft with a proper attachment point. You can also attach while the Phoenix is landed on a planet, hovering, or even when accelerating to orbit (though that’s a real challenge).

Then came the automated auxiliary engines. The combination of a set of “low-ISP-high-thrust” engines and a “high-ISP-low-thrust” Ion drive allows you to start from a planet up to earth gravity and then gain high velocity for the journey to whatever destination planet using the ion drive. The auxiliary engines can be manually moved ore (better) used in AUTO-Mode with the aFAS.

Later I decided to design it as a modular multi-purpose spacecraft with the idea behind it not only to get somewhere, but to “do things”. The internal attachment point controlling system allows to play directly with additional modules, which in future versions may be Ummu-passenger modules, Ucgo-cargo modules, as well as fully automated mining installations, stations, bases, science ... whatever. If you find this craft worth flying feel encouraged to make additional modules.

The bridge is built for an ergonomic futuristic design. With the exception of the MFD’s most switches have been replaced by touchscreens. The Radar system offers not only an overview of nearby craft but also a (limited) possibility to interact with them. Some commands are not yet implemented in the VC, so please use the key commands for the moment.

The craft offers most features of UMMU and UCGO. It can house up to 12 crew and 24 UCGO cargoes.

### **Known issues, still to be done in future versions:**

This is the first BETA-release of a work-in-progress, a lot of things are to be done and lots of ideas are still waiting to be realized...

## Technical Data Sheet

### Chassis

- Size [m]
  - Length [m] ..... 132,67
  - Width[m] ..... 71,88
  - Height [m] ..... 12,40
- Empty Weight [kg] ..... 3.821.000
  - Fuel Capacity [kg] ..... 1.441.000

### Engines

- Power [kN]
  - 2 main plasma engines ..... 13.100
  - 2 auxiliary plasma engines ..... 26.100
  - 2 Ion engines ..... 12.000
  - 4 retro engines ..... 3.800
  - RCS thrusters - each ..... 1.400
- ISP (vacuum)
  - plasma engines ..... 80.000
  - Ion engines ..... 12.000.000
  - RCS ..... 40.000

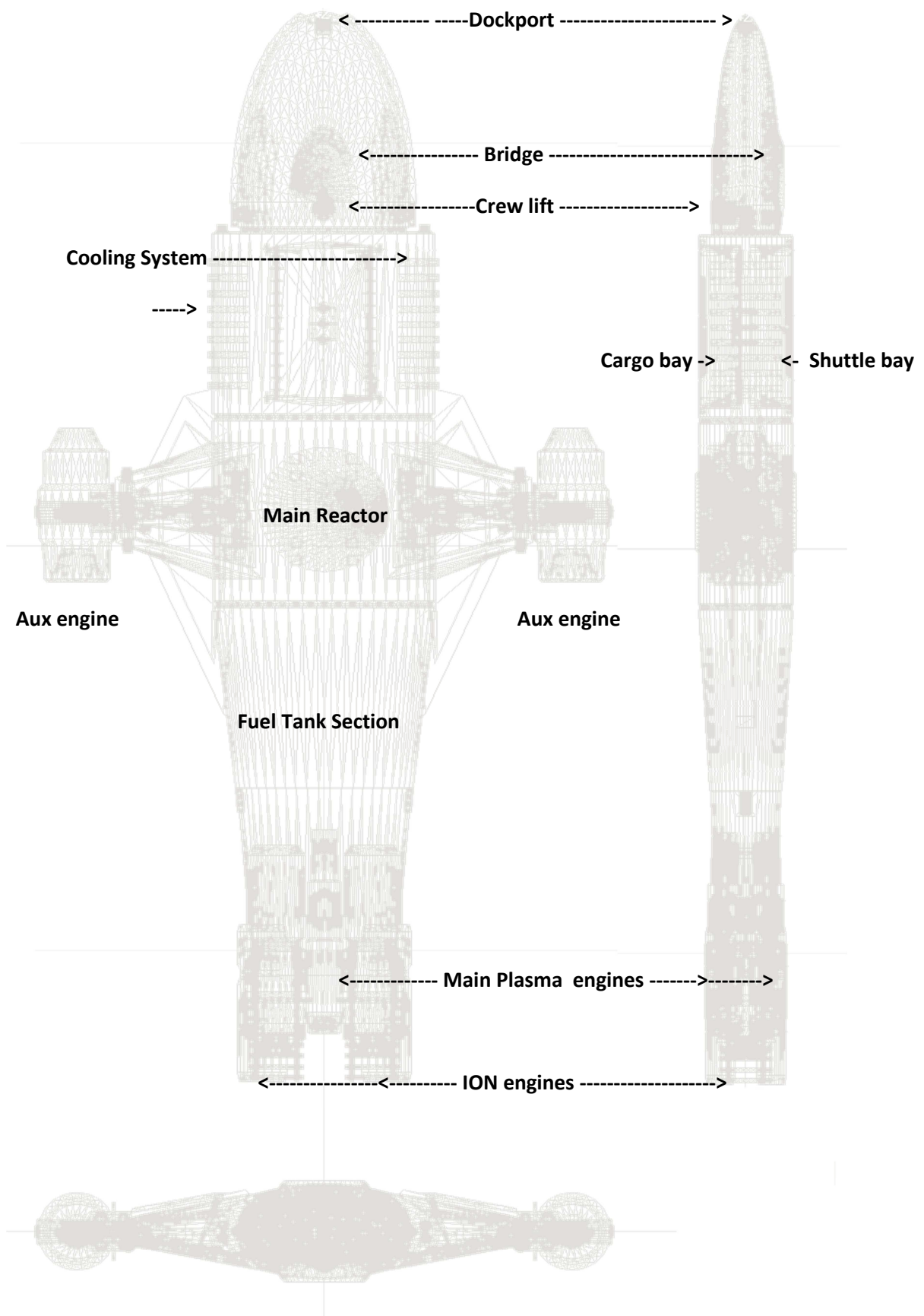
### Crew and Cargo Capacity

- Bridge Crew - Captain, Nav, Eng ..... 1 + 2
- Passenger cabins ..... 9
- UCGO cargo slots ..... 24
- Magnetic Cargo Attachment Sytem ..... 1
- Magnetic Shuttle Attachment System ..... 1
- External Multi Purpose Attachment Systems ..... 2

## Maximum Hull and System Values

	Temperature		dyn. Pressure	static Pressure	load
	[K]	°C	[kPa]	[kPa]	[G]
Hull	1150	874	137,0	622,0	8,8

## Primary Ship Systems Overview



## **Flight Manual Overview**

**Basic Steering:** default Orbiter Joystick/Keyboard commands. Fly-by-Wire recommended!

### **Advanced Steering I (FAS)**

PgDown	toggle FAS-KillRot mode / OFF
PgUp	engage FAS-Align mode
BACKSPACE	engage FAS-FULL mode

### **Advanced Steering II (Auxiliary Engines) – IMPORTANT !!!**

SHIFT-DEL	Set aux-engines to forward position
SHIFT-END	Set aux-engines to hover position
SHIFT-INS	Set aux-engines to retro position
END	toggle aux-engines AUTO-Mode, link to aFAS
DEL	rotate aux-engine forward, AUTO-mode off
INS	rotate aux-engine backwards, AUTO-mode off

### **Function and Animation Keys:**

G	operate Gear
K	operate Shuttle Bay, start Auto-Launch Sequence
D	operate Dockport
C	operate Cargo Bay
N	operate Cargo Lift
M	operate attached module on cargo lift (send "K")
J	Cargo Lift - grapple/release Cargo
S	operate Crew Lift, open/close Airlock
1	toggle front light
2,3	dec, inc HUD intensity
6,7,8	switch touchscreen, radar on/off

## Radar

ALT-Y	Decrease radar range
ALT-X	increase radar range
Z	target radar contact in recticle
U	target nearest contact

## Shortcuts:

ALT-E	EVA Captain and set focus
ALT-D	set NAV to target IDS and switch HUD to docking mode
ALT-F	set aFAS to current target
ALT-O	“open gate”- send “K” to current target

## Advanced Steering : aFAS

The aFAS (advanced Flight Assistance System) provides a stabilized flight behavior of the vessel using its RCS-thrusters, being especially useful for approach-, docking- and landing-maneuvers. It also takes care of the auxiliary thruster settings (tilt, twist and power output), which makes flying in a “non-zero-G” environment a lot easier and safer.

By now the supported modes are:

### Rotation Modes:

KILL	smooth Rotation stabilizer. Does <u>not</u> automatically disengage when vessel rotation stopped.
FACE TARGET	what it says – faces the current Target

### Lateral Modes:

Align	brings lateral movement (left/right and up/down) to zero. (“straight-flying”)
HOLD SPEED	[not yet implemented]
Full	same as align, but includes also front/rear. (“Full Stop”)

When selecting an FAS-mode all incompatible navmodes are automatically disengaged and vice-versa. The FAS references automatically to the celestial body if altitude is <100km. In free space

flight it references to the heaviest object in a 100km radius. The current reference body is shown in the lower left corner of the HUD. If no reference body is in range only KILL-mode is available.

When set to “Auto” the auxiliary engines are operated by the FAS, otherwise manually.

### **UMMU/UCGO Control, resources and life support systems**

The Phoenix can carry 24 UCGO Cargoes and holds space for 12 Crew Members. It is designed for long, interplanetary flights and is equipped with a life support system which is in need of Oxygen, Water and Food. Still keep in mind that the on board resource tanks are calculated to supply the standard crew of 3 for two years. If you plan to take passengers to distant locations you have to take o2, H2O and food cargo containers with you for inflight refilling.

The Starclipper comes with one extra helium tank that allows you to take an extra of 105 tons of liquid helium with you. Use this by refueling the helium tanks from the “cargo rack” source.

Please note that the Starclipper can also refill fuel, helium, oxygen, water and food from mines or stations that support the UCGO method. As the star trek beaming method is not yet invented, you have to be docked at the station to use this.

A recycling system and a cryo-sleep-unit for long journeys are under development.

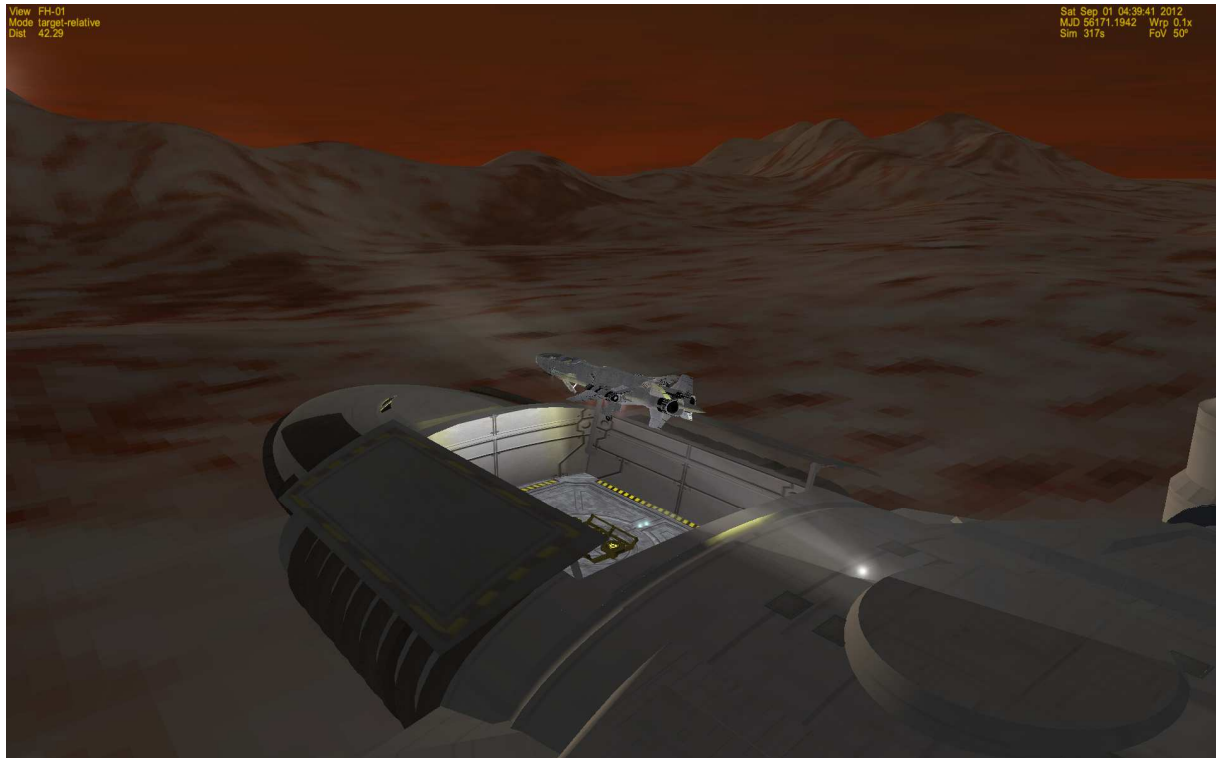
### **Main Dockport**

The retractable dockport is located at the bow, in alignment to the z-axis of the ship, which makes docking even at rotating stations - like the Wheel - easy.

### **MagPad® and MagLift® Systems**

The Phoenix features two bays – one cargo bay and one shuttle bay, both working with the MagPad® technology that uses strong magnetic fields to attach things. While the cargo bay has a deployable lift to attach big cargos, the shuttlebay is designed to grapple and hold small shuttles like the ShuttlePB, Icarus etc, or a Fighter like the F-224 “Firehawk”. By using orbiter’s attachment-functions you can safely land on a planet with a dingi in bay. You can even land a craft in the bay while the Phoenix is parked on or hovering above the ground. While in the moment the shuttle bay is specifically designed to house a Firehawk, the attachment of other vessels will be possible in future versions. Both, cargo- and shuttle bay have an IDS-system (virtual dockports 2 and 3) to allow instrument-guided cargograpppling and dingi attaching maneuvers.





**"Landing" a Firehawk in shuttlebay while hovering over the ground**

#### **Required add-ons:**

Orbiter Sound

UMMU

UCGO

#### **Recommended add-ons:**

**D3D9**

Fly-by-wire

**Tested against clean orbiter 100830 installation with D3D9 client, sound 4.0 and UMMU/UCGO**

Meshes made with Anim8tor, the 3ds2msh converter and Mesh Wizard.

Textures made with GIMP, most of them are based on free downloads.

Basic concept made with Vinka's spacecraft3, converted for further coding with Artlav's SC3-converter.



## Special thanks to

**Martin Schweiger** for orbiter and all the inspiration coming with it,

**Dansteph** for UMMU, UCGO and Orbiter Sound,

**AR81** for his great tutorials and tools,

**Vinka** for spacecraft3 and **Artlav** for his SC3 to C++ converter

and of course all the add-on developers who helped me to gain some coding skills by making their source codes available for learning and inspiration.

© 2016 by Joachim Büchau, aka bluedragon.

This software is FREEWARE and may not be sold or distributed for a fee under any circumstances, including a "distribution fee."

You may not redistribute this software or host it on your own Web site.

You may not charge a fee of any kind to use this software, nor may you use this software for any commercial purpose or run this software in a public exhibit or public simulator, regardless of the terms governing the Orbiter instance on which it is running, without express written permission signed by the author.

This software is provided without any warranty, either expressed or implied. You may not use any ship's mesh, skins, or custom textures for another ship or product without express written permission from the author as stated above.

Bug reports and ideas are welcome. And finally:

Have fun!