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Legal

Content is provided for demonstration purposes only.

Administrators and operators must read the manual before operating a new vehicle.

Any user must read the manual before operating a new vehicle.

Your luxuriously appointed way to travel to the stars awaits you!

Your well appointed spaceship awaits you!

The materials are (very) loosely based on content related to the NASA orbiter. Great work NASA! We applaud you. The text is created to fill space, make for some interesting reading, and provide a sample that is clear to understand but next to impossible to confuse as real materials. In most cases the content is here to facilitate the demonstration of the features available in this software, not to guide you on how to setup or fly a spaceship.

It's best if you don't try to fly any spaceship. Even a personal one. Ever. Seriously. You likely aren't qualified. If you are, then you likely can't afford to buy one. If you can, then odds are you won't be working as an author creating content and developing templates. If you are, then contact us to do a really awesome presentation on how you use these tools in your job. If you do happen to fly a spaceship, don't use this content as a guide.

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Contacts

Questions regarding the organization and content of this document (Documentation ID: 83-3844-8) should be directed to the following departments:

Table 1: Contact list

Geographic Region	Company Headquarters	Primary Department
Europe	Asteritie 7D Helsinki Finland	
	Zentrumplatz Meggen Switzerland	
India	Sector 25A Noida, 201301	
North America	King City, ON Canada	Documentation
	Fairfax, VA USA	STC Offices

General description

The section provides general background information about the vehicle and its fuel systems.

- "History of flight" on page 8
- "Overview" on page 11
- "Vehicle structure" on page 13

Flight used to depend on an aircraft engine and propeller. Today's modern Personal Spaceship is ready to go with a hydrogen and oxygen mix in an external tank and solid rockets for auxiliary take-off power.

Propeller based flight: Type of fan that converts rotating motions into thrust. This method of powering flight is not applicable to your vehicle, but is a good historical reference.

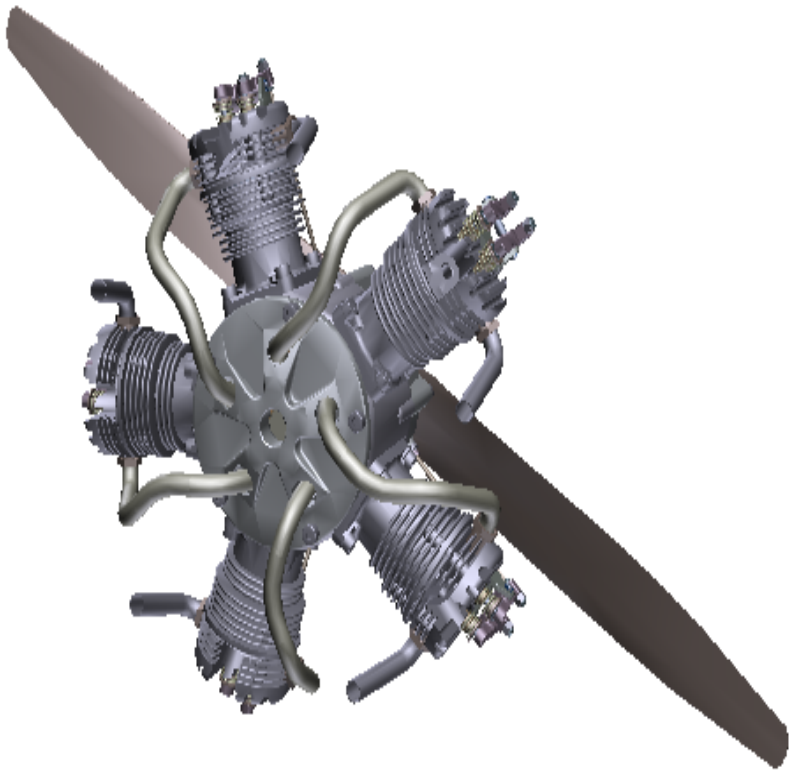
Rocket based flight: A spacecraft obtains thrust from a rocket engine which is not reliant on the atmosphere and work very well in space.

1.1 History of flight

Historically we've relied on the engine and propeller model.

Automatically-generated animation tables, component tables, views tables, links from 3D image components to text., and links from text to a 3D image are showcased here.

Image A. Early aircraft engine



Tip: Click any of the formatted terms to see the component highlighted in the illustration.

Animations: Show Animation

Major Components: Rear Wall, Propeller, Cylinder, Crankcase, Cylinder Head, Spinner, Intake, Cam Housing

Views: Default, Left, Right, Front, Back, Bottom

We've moved from the basics of flight to space travel as it was imagined in fiction and seen in movies in under 100 years. Just think about where the next 100 years will take us!

Today the promise of space flight is closer than ever. With your own Personal Spaceship you can travel to the stars!

To see a video of a shuttle launch, click the following image. Please note that there is no audio for the video.



None of the work on the Personal Spaceship would have been possible without the research and work done over the years by the good folks at NASA.

To learn more about the history of their great achievements, what they are doing at present, and what the future of NASA holds, visit these sites!

Table 1: More information about space travel

Site location	QR Code (Scan/go)
http://www.nasa.gov	
STS-120 Space Shuttle Launch	

1.2 Overview

Congratulations on your purchase of a Personal Spaceship and welcome to the documentation designed to help you get the most out of your vehicle.



The vehicle has three primary elements: a spacecraft, two solid rocket boosters, and an external fuel tank. This can transport you and your guests into near Earth orbit and you can even carry cargo with you in a bay 7 feet in diameter and 25 feet long.

1.2.1 Spaceship requirements

Major system requirements support reuse of the vehicle and the two rockets. The nominal trip is 1 to 3 days in space. In returning to base the vehicle has a range of about 1,000 nautical miles[1].

1.2.2 Launch and landing site

Ensure the launch site meets minimum requirements.

- The launch site must meet physical dimension requirements:
  - at least 5 miles[2] long;
  - at least 3 miles[3] wide.
- Site statements must be completed and approved for:
  - environmental, and;
  - safety.
- Additional setup is specified in the companion document **Site Setup**.

1. Range is dependent on multiple factors including air resistance, descent speed, and other weather conditions.
2. 8 km
3. 5 km

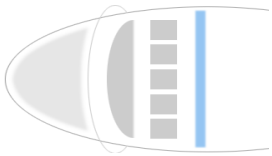
1.3 Vehicle structure

The vehicle can be divided into two major parts primarily made of aluminum and thermally protected by surface insulation.

- "Crew area" on page 13
- "Wing" on page 18
- "Thermal protection" on page 18

1.3.1 Crew area

The crew area has a side hatch normally used to enter or exit the vehicle. There is a hatch to the above wing storage area. There are also shielded and protected windows.



Seating for five is provided and a full restraint system is built into each seat. All seats include personal audio and video entertainment options. Seats also fully recline into a sleeping arrangement that can lie flat at 180 degrees.

Seating for three is provided and a full restraint system is built into each seat. The pilot seat includes personal audio options. Seats also recline up to 140° for sleeping.

Each seat serves several functions, detailed in the following sections.

1.3.1.1 Adjust the seat temperature

Everyone likes to have a seat at a setting that is most comfortable to them and the seat coolness or warmth is fully configurable.

Caution	**There is a minimum and maximum defined by your administrator to ensure seats are not uncomfortable.**

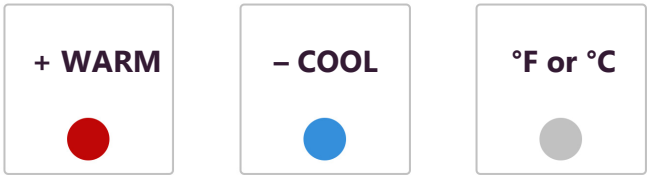
Step 1 Launch your personal **Primary Control** dialog.

Step 2 Select **Seat Configuration**.

Step 3 Tap **Layout**.

Step 4 Tap **Temperature**.

Step 5 Adjust the temperature up or down.



Result of this task: The temperature blinks until the new setting is reached at which point the temperature remains steady.

1.3.1.2 Change the seat temperature display

Personal preference for Fahrenheit or Celsius can be set.

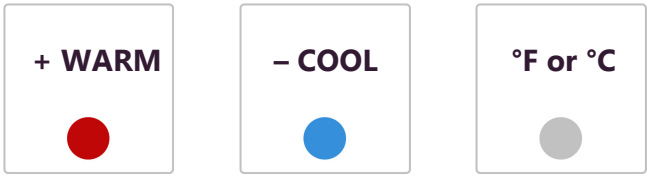
Step 1 Launch your personal **Primary Control** dialog.

Step 2 Select **Seat Configuration**.

Step 3 Tap **Layout**.

Step 4 Tap **Temperature**.

Step 5 Toggle the temperature setting.



1.3.1.3 Recline the seats

Converting the seats to a reclined sleeping position can be done at the push of a button.

Step 1 Launch your personal **Primary Control** dialog.

Step 2 Select **Seat Configuration**.

Step 3 Tap **Layout**.

Step 4 Tap **Recline to Lie Flat Bed**.

Result of this task: The seat slowly reclines to a fully flat bed.

Result of this task: The seat reclines slowly to a comfortable sleeping angle.

When done, remember to: Adjust the lighting for your personal pod area based on the desired brightness when resting.

1.3.1.4 Adjust the lighting levels

Lighting levels can be individually configured based on preferences.

In some cases the pilot or other administrator of the system may override your personal lighting preferences due to safety or other factors.

The administrator of the system has the ability to override any personal preferences. In most cases this is defaulted to the pilot, but a passenger can also be promoted to an administrator.

Step 1 Launch your personal **Primary Control** dialog.

Step 2 Select **Lighting Configuration**.

Step 3 Tap **Layout**.

More info: As the administrator, if you tap **Override all Layouts** you can set global lighting for all seat positions.

Step 4 Tap the appropriate light level or configuration.

Result of this task: The lighting in your pod adjust based on your preferences.

1.3.1.5 Use the drink dispenser

When in space it's important to stay hydrated but at the same time it can be difficult to drink fluids without having liquid floating around.

Step 1 Launch your personal **Primary Control** dialog.

Step 2 Select **Drinks**.

Step outcome: A seat slot opens exposing the drinking tube.

More info: If the tube is not at your usual seat, and you are using someone else's dispenser, first change the straw tip.

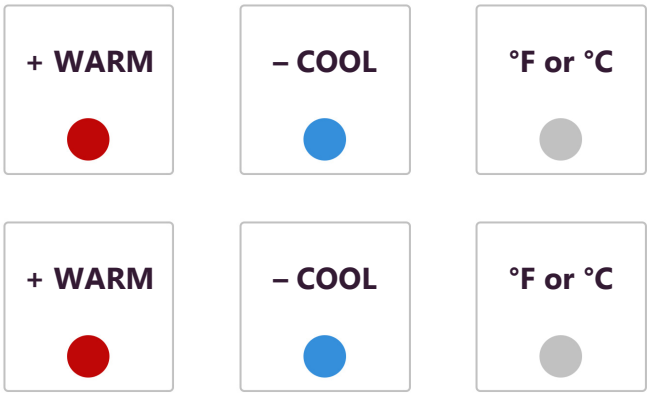
a Remove the numbered and color coded straw tip that is currently in use.

b Replace the straw tip with another one from the Straw Tip Repository located next to the straw.

Step 3 Place the drinking tube into your mouth.

Step 4 Tap **Options**.

Step 5 Select the type of drink you wish to consume.



Example: If you want a drink such as an Earl Grey tea with a bit of honey in it, then select **Hot**. If you want a room temperature drink, select **Cool**. For an icy beverage, select **Cold**.

- **Hot** includes drinks served noticeably above room temperature.
- **Cool** includes drinks served at or close to room temperature.
- **Cold** includes drinks served well below room temperature.

Step 6 Choose the specific drink you desire.

More info: Based on your choice you may have to make further selections.

When done, remember to: Suck on the drinking tube and enjoy the beverage of your choice.

1.3.2 Wing

The wing is an aerodynamic lifting surface that provides conventional lift and control for the spaceship.

Both wings are made up of many parts. Details on the specific wing configuration can be found in the parts catalog included with your customized vehicle.

Image B. Wing assembly

1.3.3 Thermal protection

Heat protection against burnup and cold protection against the void of space is provided by materials applied to the outer skin of the vehicle to maintain acceptable temperatures.

The outside of the vehicle is made of aluminum and epoxy. Reentry temperatures can exceed 3,000 °F[1]. Outside temperatures can plummet to minus 250 °F[2].

Materials are used in a preferred order and include:

1. 1650 °C
2. -155 °C

1. Reinforced carbon fiber.
2. High temperature reusable surface insulation.
3. Low temperature reusable surface insulation.
4. Specialized materials for other exposed internal surfaces.
    a) Flexible surface insulation over standard shapes
    b) Insulating blankets strapped to non-standard shapes

Systems

Systems

This section discusses in detail each of key vehicle systems. There is descriptive information covering general purpose, function, and location.

- "Escape system" on page 22
- "Crew and passenger system" on page 23
- "Landing system" on page 24

2.1 Escape system

Safety first! There are many escape systems based on the type of operation you plan. You can get out early at the launch site, escape the main cabin, or even eject safely during re-entry if needed.

During normal operations you don't need all the usual safety gear, but during times of the most vehicle stress it' important to consider all aspects of your safety. Depending on the part of the trip you are on the appropriate escape system should be used.

2.1.1 Launch pad escape

If there is a problem on the launch pad you can escape through a slidewire basket. There are multiple exits to many exit locations depending on the problem.

2.1.2 Cabin escape

The cabin can also be evacuated through a self-enclosed ejection system. This system will result in quick depressurization of the cabin to match the surrounding pressure (so in space it will completely vacate the air from the cabin, but within the atmosphere it will normalize to the outside pressure.

2.1.3 Landing escape

If upon landing you need to escape a slide (like on airplanes) is available to quickly get you to the ground. This can evacuate the entire vehicle in under 1 minute.

2.2 Crew and passenger system

Many pieces of equipment and systems that the crew and passengers use are only covered here, and not in other parts of the manual. This is largely due to the nature of these parts. They are largely just to make the crew comfortable. They don't play a specific role in the ongoing operation of the vehicle.

2.2.1 Hygiene

There are both male and female hygiene and grooming provisions. While on extended travel crew or passenger can use the personal hygiene system that is included on the vehicle.

2.2.2 Sleep

To make it more comfortable to sleep on your trip, provisions including a sleeping bag, liners, and a pillow are included with each seat.

2.3 Landing system

The approach to landing is to descend in the same way that any conventional aircraft. That is, the vehicle descends through the air, approaches a landing strip, and makes a normal landing.

If an emergency landing is required any airport capable of supporting normal traffic can be used to land.

2.3.1 Landing gear

The landing gear has three landing gear assemblies; one in the nose, another to the left and right in the lower wing areas. Each gear assembly has a shock strut and multiple wheel and tire assemblies to distribute the weight and shock of impact.

2.3.2 Braking

Each of the landing gear wheels is equipped with ABS disc brakes and a mix of hardware and software to prevent skidding.

Operating limitations

There are a wide set of limitations and the User Guide only lists a few key ones you need to know. Ensure you review the Flight Operations Manual.

DANGER! **Limitations are the operational limits, which if exceeded, affect safety or result in performance loss.**

- "Engine limitations" on page 26
- "Airspeed limitations" on page 27

3.1 Engine limitations

While you can safely operate the engines at up to 100% of the power level, there is also a requirement to operate at a range of powers levels.

An upper range of 109% has been set as a temporary override to the engine limits. This may be run for up to 600 seconds of operation.

DANGER! Actual flight performance has not been tested beyond time and power levels for more than 600 seconds. Exceeding this can permanently damage the vehicle.

The primary computer system monitors the temperature of the turbopump components including:

- high pressure fuel pump
- high pressure oxidizer
- high pressure pump at low temperature

Temperatures exceeding operating limits will result in a main engine shutdown. If the captain has manually prevented this the temperature can be forced to exceed limits.

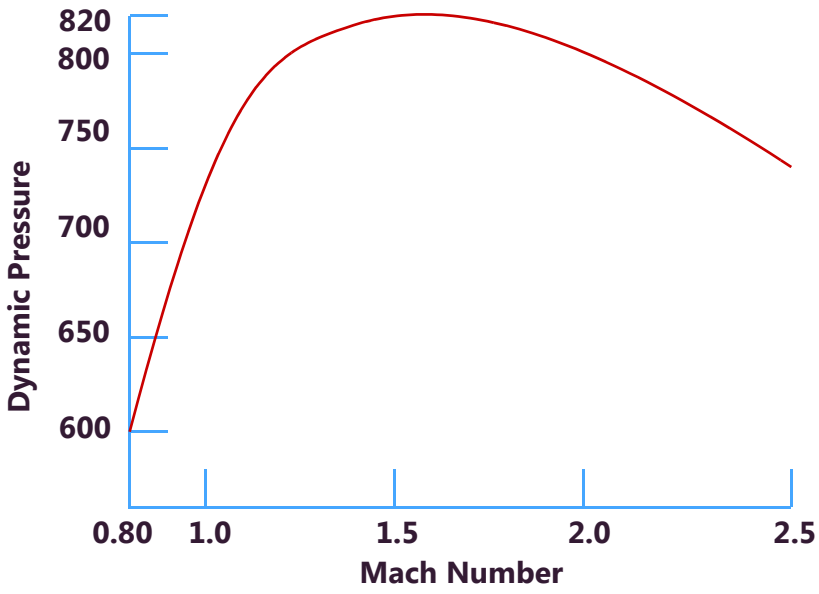
3.2 Airspeed limitations

Primary limitations are applied to takeoff, re-entry, and landing and must be observed.

3.2.1 Takeoff

The **maximum** airspeed for the vehicle is 492 knots equivalent airspeed (KEAS) where $KEAS = \sqrt{q - bar} * 17.18$ (see figure below).

There is no official **minimum** airspeed for ascent.



3.2.2 Entry

The **maximum** airspeed during entry is also a function of q-bar, which varies during descent.

DANGER! **If the maximum speed is exceeded, the vehicle may become unstable in roll/yaw. The maximum airspeed limit is 486 KEAS.**

The **minimum** airspeed for Mach less than 5.0 is 163 KEAS.

3.2.2.1 Landing

Maximum airspeed for **lowering the gear** is 312 KEAS, based on landing gear structural limits.

Maximum speed **at landing** is based on the ground speed certified tire speed limit. The **maximum** predicted ground speed at touchdown should not exceed 214 knots.

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