



Convair NEXUS

Version 1.01

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Many thanks go to Martin Schweiger, for actually developing the simulator I used to daydream about in astrodynamics classes!

<http://www.orbitersim.com>

Unpacking:

Use Winzip to put each subfolder in its matching Orbiter folder.

The Convair NEXUS is a Velcro add-on; it requires the Velcro Rockets add-on for the base code. Install [Velcro Rockets](#) (v1.1 or later) first.

Introduction:

Welcome to the Convair NEXUS add-on!

NEXUS was designed by Krafft Ehricke and his team at General Dynamics in the mid-1960's, and was intended as a large post-Saturn launcher.

Possibly the largest conventional-propulsion launcher ever seriously studied, NEXUS is an enormous tuna-can-shaped LOX/LH2 rocket. 120 feet in diameter and three-quarters as tall, NEXUS has an aerospike engine and parachutes in the tail, and heat shielding and retro rockets on the nose. NEXUS is a single-stage-to-orbit launcher to put 1000 tons in orbit at a whack.

NEXUS was also designed with a Brobdignagian second stage. By orbiting the fueled second stage with 100,000 kg payload, this is a notional manned Mars mission orbited in a single launch.

NEXUS Operation:

Since the code is from Velcro Rockets, keys will be the same:

Keys:

- O** – Autopilot toggle on/off
- J** – Jettisons the next payload
- U** – Enter a new launch azimuth

Once separated, the NEXUS runs its own code, using Velcro Rockets' "BECOME" parameter.

Accomplish your de-orbit burn while facing PROGRADE and using the keypad - key. This will fire the four forward-facing retros and slow you down; stop when your perigee is where you want it.

Jettison the de-orbit motors and forward shroud by pressing the **J** key. If you have no fuel, this will happen for you automatically, so, during boost, make sure to save a small amount of fuel (0.1 or 0.2 percent) for a retro-fire, if you wish.

If you do nothing, jettison of the forward shroud and retro motors will happen for you automatically as you descend through 100 km altitude. You cannot re-enter with the forward shroud on. Nor should you want to.

Drag flaps will deploy automatically and immediately.

The NEXUS is slightly unbalanced to create a little bit of lift; bank to control your lift vector.

The parachutes will deploy automatically at 7 km altitude.

The solid-fuel retro rockets will fire automatically at 50 meters altitude, though the normal retro key will trigger this early.

You should splash down gently and await recovery. We sincerely hope you did not come down on dry land; it's bad for the NEXUS and also for whatever is under it.

There are three propellant tanks; one inherited from the launch tanks (purged automatically when descending below 9 km), one for attitude jets, and one for the retro rockets.

Known issues:

The same as with Velcro Rockets.

The second stage is low-powered if trying to loft a large payload to LEO, so careful attention to the MINPITCH parameter will be required. This mode is not recommended.

Version history:

V1.01

Re-compiled for Orbiter 2010

V1.0

Tweaked lift

V0.91

Added lift

Changed retros to actually retro-fire; new retro section mesh.

V0.9

Mostly-final beta release.