

Re: How Rockets Differ From Jets

Source: <http://sci.tech-archive.net/Archive/sci.space.shuttle/2005-10/msg00480.html>

- *From:* "Brad Guth" <ieisbradguth@xxxxxxxxx>
 - *Date:* 25 Oct 2005 23:03:33 -0700
-

tomcat,

There's nothing unimpressive about our existing shuttles, nor about your proposed Spaceplane. They're certainly big items, extremely complex and at least our shuttles remain relatively heavy for their usable volume even when bone dry, not to mention spendy as all get out to have been created in the first place, as well as damn near as spendy to keep reusing, especially spendy if you'd care to put any price tag on human life as well as for their horrific environmental impact upon mother Earth that goes far beyond that which is launch contributed. The biggest technical problem remains their rate of LH2/fuel and O2/oxidiser consumption is so horrific that the ET needs to be several times the volume of the entire shuttle itself, and even then it needs those two extremely powerful SRBs/SBRs to boot. Therefore, short of using an H-Bomb as a method of getting yourself into space, the shuttle is next in line to being nearly as spendy per kg and damn near as lethal as any form of metro transportation gets.

Here's what seemingly everybody already knows, although topic newcomers might be amused to learn;

<http://science.ksc.nasa.gov/shuttle/technology/sts-newsref/srb.html>

The two SRBs provide the main thrust to lift the space shuttle off the pad and up to an altitude of about 150,000 feet, or 24 nautical miles (28 statute miles). Each booster has a thrust (sea level) of approximately 3,300,000 pounds at launch. The two SRBs provide 71.4 percent of the thrust at lift-off and during first-stage ascent. Seventy five seconds after SRB separation, SRB apogee occurs at an altitude of approximately 220,000 feet, or 35 nautical miles (41 statute miles). SRB impact occurs in the ocean approximately 122 nautical miles (141 statute miles) downrange.

Each SRB weighs approximately 1,300,000 pounds at launch. The propellant for each solid rocket motor weighs approximately 1,100,000 pounds. The inert weight of each SRB is approximately 192,000 pounds.

Rocketdyne SSME @~500,000 lbs thrust (Vacuum)

<http://www.boeing.com/defense-space/space/propul/SSMEamaz.html>

<http://www.boeing.com/defense-space/space/propul/SSME.html>

SSME can attain a maximum thrust level (in vacuum) of 512,950 pounds

Re: How Rockets Differ From Jets

which is equivalent to greater than 12,000,000 horsepower.