

The British Scale For Launch Vehicle Mass Classification

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A consensus¹ has recently emerged on a basic nomenclature for launch vehicle and payload mass classification units and scale, which is, any mass delivered to low Earth orbit, with the masses of orbiting cores and upper stages included. This assumes that any rapidly evolving launch vehicle development will trend towards ever heavier and larger launch vehicles and payloads, as well as the smaller and lighter missions, masses and payloads of the emerging commercial space sector.

Nomenclature	Terminology	Mass	Scale	Units	Classification
Suborbital	R&D, zero g	kilograms	per	flights	reusable rockets
	space tourism	passengers	per	years	rocket planes
Ultra Light	R&D, microsats	1 – 100 kg	100 ×	missions	flying wings
Light	small satellites	100 – 1000 kg	10 ×	launches	Falcon 1e
Light Medium	science, satellites	1 – 10 MT	10 ×	payloads	Delta II, Taurus II
Medium Light	small capsules	metric tons		vehicles	Soyuz, Falcon 9
Medium	GPS, comsats	10 – 25 MT	2.5 ×	metric tons	Atlas, Delta, Zenit
Medium Heavy	recon, modules	25 – 50 MT	2 ×	metric tons	Proton, Delta IVH
Heavy	station assembly	50 – 100 MT	2 ×	metric tons	Shuttle, cargo bay
Super Heavy	exploration	100 – 200 MT	2 ×	metric tons	Orbiter, Energia
Ultra Heavy	development	200 - 400 MT	2 ×	metric tons	Vulcan

I refer to this the ‘*British*’ launch vehicle payload mass scale, since it involves the multiplicative scaling of launch vehicle and payload mass in both decimal and binary (factor of 2) scale factors, achieving a new perspective of a spectrum of launch vehicle design. The prefixes super and ultra are fairly interchangeable, and the classifications and distinctions of light, medium and heavy are relatively clear. In this classification the space shuttle would be a medium heavy launch vehicle by payload alone, but also a super heavy launch vehicle when the mass of the orbiter is included.

Representative Vehicle Images



References

1. <http://forum.nasaspaceflight.com/index.php?topic=21867.msg605363 - msg605363>