

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>