

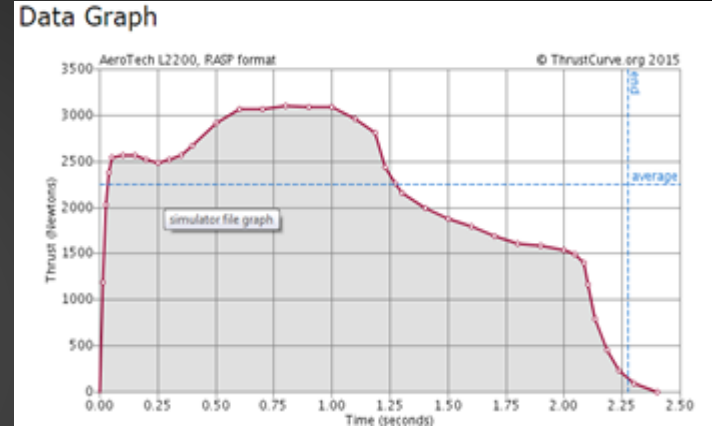
Propulsion

Motor Specifications

Solid propellant

L2200-Mojave Green

- Designed by Aerotech, bought through separate party
- With max impulse/force, constraints set for rocket



<u>Statistics</u>	<i>Declared</i>	<i>Calculated</i>	<i>Official</i>
Diameter (mm):	75.0	n/a	75.0
Length (cm):	66.5	n/a	68.1
Prop. Weight (g):	2,516.0	n/a	2,518.0
Total Weight (g):	4,751.0	n/a	4,783.0
Avg. Thrust (N):	—	2,246.6	2,200.0
Max. Thrust (N):	—	3,101.8	—
Tot. Impulse (Ns):	—	5,104.1	5,104.0
Burn Time (s):	—	2.3	2.3

Assembly of Motor

Hardware

- casing
- seal disk (metal)
- aft closure
- forward closure

Reload kit

- 4 propellant slugs
- nozzle
- tracer smoke (goes into forward closure with insu)
- O-rings
- 2-3 grain spacers (go between grains)
- seal disk O-ring (fits in lining)



Contents of a Typical 38mm RMS Reload Kit

Notes:

- Total impulse shown is optimum
- Short—Approx. 6 sec.
- Medium—Approx. 10 sec.
- Long—Approx. 14 sec.
- X-Long—Approx. 18 sec.



Igniter / Ignition System

- Ignition for a propulsion system is only needed for the initial reaction.
- Igniters can be used later in flight if the fuel's combustion flame dies.
- Two Types:
 - Propellants that create instantaneous ignition
 - Pyrotech approaches, heating a plate and causing a combustion reaction.
- Issues that arise can be that a failed ignition can fill tanks with fuel and oxidizer, leading to overpressure.

Certification

Level 1:

Type 1 model kit ~ \$100/person

Around \$30/engine/person

Complete a [NAR High Power Certification Application](#) before launch

Level 2:

Written Test - 37 Questions out of 97 Question pool

Must get at least 32 right

Type 2 model kit ~ might be able to use the Level 1 rocket

Around \$60/engine/person

Level 2 certification most likely needed (J,K,L Motors)

- A high-power rocket has a total weight of more than 1500 grams and contains a motor or motors containing more than 62.5 grams of propellant or rated at more than 160 Newton-seconds of total impulse. (Class L has 2,560–5,120 N·s)
- Non-commercial motors require full duration static firing with documentation by March 31.
- Required to purchase/launch HPR motors

