

Subsystem Mass Breakdown

<u>propellant & tanks</u>	<i>(Biprop)</i>	<i>(spherical tanks)</i>
MMH:	140.95 kg	(includes 20% margin)
MMH tank:	16.26 kg	
NTO (MON-3):	304.44 kg	(includes 20% margin)
NTO (MON-3) tank:	19.80 kg	
cold gas (N ₂)	40.61 kg	(includes 20% margin)
cold gas tanks (total)	40.33 kg	(qty = 2)

<u>propulsion system</u>		
main thruster:	6.80 kg	(R-40B)
pressurant (He):	0.67 kg	
pressurant tanks:	6.87 kg	(qty = 2)

<u>structure</u>	
square Al tubing	73.40 kg

<u>shielding</u>	
Whipple, triple-wall, 5"	224.31 kg

<u>docking mechanisms</u>		
soft capture	75.00 kg	(guess)

<u>GNC</u>	<u>total mass</u>	<u>qty</u>	<u>individual mass</u>
reaction wheels (4)	13.5 kg	4	3.38 kg
cold gas thrusters (12)	4.512 kg	12	0.38 kg
horizon sensor	0.066 kg	2	0.033 kg
fine sun sensor	0.035 kg	1	0.035 kg
star tracker	0.00282 kg	2	0.00141 kg
IMU/GPS	5.9 kg	2	2.95 kg

<u>Comm</u>	
general (hw, wires, cpu)	25.00 kg
antennas (2)	0.40 kg

<u>Power</u>	
solar cells	25.00 kg
batteries (2)	7.00 kg

<u>General</u>	
valves, plumbing, wiring	14.00 kg
hardware	11.18 kg