

## Standard Propulsion System

**X19039000**

VACCO's Standard Micro Propulsion System (MiPS) provides a highly reliable, intelligent, attitude and delta-V system for CubeSat and SmallSat applications. Components and manufacturing methods used are the product of 60 years of space experience including two systems that powered both highly successful Mars Cube One (MarCO) CubeSats.

The Standard MiPS features four 25mN cold gas thrusters. Bolt-on nozzles facilitate a wide range of fixed thrust directions. The modular design can be scaled from 82 to 515 N-sec Total Impulse. Custom versions are also available.

**Performance Density:  
228 to 358 N-sec/L**



### Features:

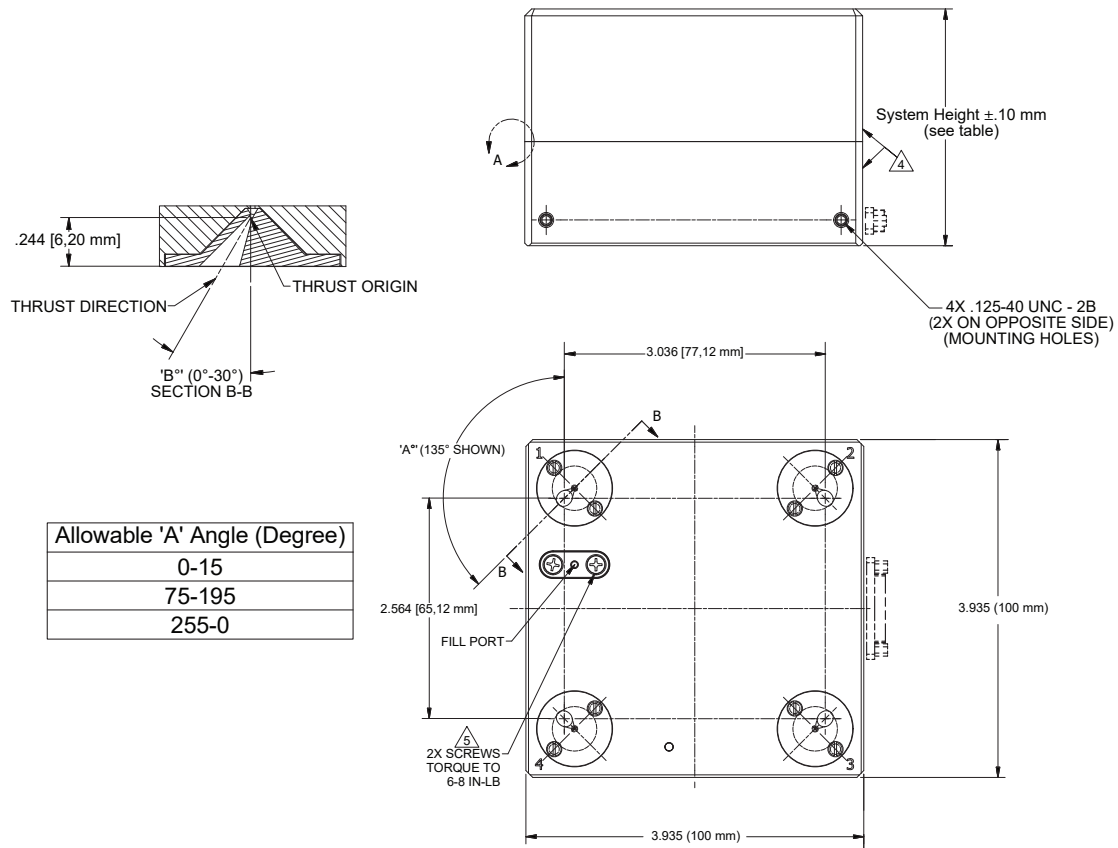
- Range Safety Friendly design (<100 psia)
- Leak before burst pressure boundary
- Integral Microcontroller with RS422 digital interface
- Radiation resistant components with integral shielding
- Robust, sophisticated flight-proven software
- Accepts unregulated input power
- <1W required for communication and health monitoring
- 12W peak power
- Frictionless space quality valves
- All-welded, high strength structure
- Fully manifolded components (no tubing)
- "B" thrust angles from 0° to 30°
- Performance density 228 to 358 N-sec/Liter

### Operating Parameters:

Propellant.....	R236fa	Total Impulse.....	See "Performance Table"
MEOP/MDP.....	6.89 bar (100 psia)	Dry Mass.....	See "Performance Table"
Proof Pressure.....	10.34 bar (150 psia)	Propellant Mass.....	See "Performance Table"
Burst Pressure.....	17.24 bar (250 psia)	Operating Voltage.....	9.0 to 12.6 VDC
Internal Leakage.....	<0.5 scch R236fa	Standby Power.....	1 W Max.
External Leakage.....	<1 x 10 <sup>-6</sup> sccs GHe	Warmup Power.....	12 W Max.
Operating Temperature.....	-15°C to +55°C	Thruster Operating Power (4 thrusters).....	12 W Max.
Non-Operating Temperature.....	-30°C to +55°C	Data Interface.....	RS422

*Performance characteristics are based on customer requirements. As such, they are not representative of component capabilities or limitations.*

## Envelope Drawing:



## Performance Table:

R236fa Cold Gas System Table					
Part Number	System Height	R236fa Propellant Volume	R236fa Propellant Liquid Mass	MiPS Dry Mass	Total Impulse
Dash No.	(mm)	(cc)	(grams)	(grams)	(N-Sec)
X19039000-01	36	170	209	639	82
X19039000-02	70	453	557	799	219
X19039000-03	100	697	857	956	336
X19039000-04	144	1,068	1,314	1144	515

## Flow Schematic:

