



# B20 THRUSTER

The B20 thruster assembly includes the thruster body, valves, and control electronics. The thruster body is additively manufactured as a single structure using Inconel 718 and includes the injector, combustion chamber, and nozzle. Isolation valves are included upstream of the firing valves for added redundancy. Health monitoring instrumentation includes an integrated and isolated thermocouple and chamber pressure sensor. With standard data and power interfaces, thrusters are easy to command and operate. The B20 is also operable under ambient conditions to enable fast turnaround ground testing.

## Green propellants

The B20 utilizes nitrous oxide (N<sub>2</sub>O) and propylene (C<sub>3</sub>H<sub>6</sub>). Propellants are widely available, with low costs and lead times from domestic suppliers.

## High performance

Experience significant time and power savings by switching to spark-based ignition to conduct cold-start to full thrust firings in under 100ms. Achieve high performance exactly when needed by removing sensitive catalysts.

## Modular and scalable

Combine multiple thrusters for high-thrust missions. Pair with Dawn's B1 thruster for torque compensation or 6DOF control through common tanks, interfaces, and control electronics.

## Less parts = higher reliability

Propellants are self-pressurizing and don't require external pressurants, high-pressure regulators, or mechanical PMDs. There are no rare-Earth materials, catalyst beds, or proprietary propellants. The result: low part count, low weight, low cost, and high reliability.

# Thruster specifications



Physical	
Thruster dimensions	176 x 80 x 79 mm (6.93 x 3.15 x 3.11 in) incl. keep-out zones
Dry mass	600 g (1.32 lbm)
Nozzle expansion ratio	100:1
Valves	Normally-closed solenoid Four per thruster (firing and isolation)
Environmental	
Operational temperature	-5°C to 30°C (23°F to 86°F)
Survival temperature	-30°C to 40°C (-22°F to 104°F)
Performance	
Thrust, range	6.1 to 16.7 N (1.37 to 3.75 lbf)
Specific impulse	277 s
Minimum impulse bit	Bi-prop: 1 N.s (0.22 lbf.s) Cold-gas: 50 mN.s (0.01 lbf.s)
Ignition	Spark-based igniter
Pulse frequency	4 Hz
Restarts	11,000+ per thruster
Control	Operable together or independently. Select your desired quantity. Pair with B1 thrusters.
Firing modes	Bi-prop & cold-gas. Switch at will. Managed by not engaging the spark-igniter
Cold-start capable	Yes. Highly repeatable
Interfaces	
Mounting	3x M5 threaded holes
Valve power	Hit: 14.4 W for 25 ms (per valve) Hold: 0.75 W (per valve)
Igniter	6.4 W max for 50 ms



**Not sold separately**  
Please note that all Dawn thrusters are only supplied as part of a turn-key propulsion system. Thrusters cannot be purchased individually.