



# Hypersonic Propulsion

Northrop Grumman is ushering in a new era for faster, more survivable and highly capable weapons with our critically important hypersonic propulsion solutions.

1 Ballistic	2 Boost Glide	3 Scramjet
Developed for either short-range or intercontinental use, ballistic missiles use a solid- or liquid-fueled rocket for propulsion, and a self-guided system to follow a predictable flight path to a predetermined target.	Designed to attack close-range targets with maneuverability at the core, hypersonic boost glide propulsion vehicles briefly exit and reenter the atmosphere before gliding at hypersonic speeds to their targets. These unique distinctions make a boost glide vehicle extremely difficult to track and therefore an effective fast-attack method.	Scramjet propulsion advances speeds greater than Mach 5 and maneuverability never seen before in traditional missiles, and it also leads to a smaller form factor missile while offering more capability. This means platforms can carry more weapons in less space.

## Features

Northrop Grumman brings together technology, capabilities, and existing and new facilities to design, test and produce multiple hypersonic propulsion solutions.

## Missions We Support

- Extended long range air-to-ground missiles
- High-speed and hypersonic solutions for long range strike and air-to-air missiles

## In Production

- Scramjet propulsion systems for first-of-its-kind hypersonic weapon

## Our Advanced Weapons Edge

- 550-acre campus provides advanced propulsion manufacturing, development and testing for propulsion (including high performance solid propellant boosters,

controllable-thrust propulsion, and hypersonic ramjet and scramjet propulsion systems), and electronic subsystems for thrust vectoring and attitude control systems

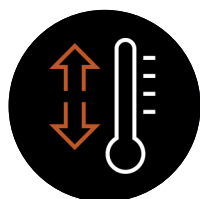
- Construction of a first-of-its-kind Hypersonics Capability Center in Elkton, Maryland, designed to provide full lifecycle production, from design and development to production and integration for hypersonic weapons
- Only defense company with integrated fuze and warhead design to maximize effectiveness and performance
- In-house aerothermal testing up to Mach 8

## Benefits

- Extreme range extension
- Small form factor
- Platform agnostic
- Advanced materials



>Mach 5 Speeds



Withstands Extreme Temperatures



Difficult to Detect



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