

# **THE HOMELANDER INTERCEPTOR**

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## The Homelander Interceptor

The Homelander Interceptor (Jetson Homelander) is a lightweight, remotely piloted interceptor designed for speed, agility, and rapid response. Its design removed g-force limitations by eliminating an onboard pilot, allowing for more aggressive maneuvering. The Homelander features an unstable configuration to enhance agility, supported by a flyby-wire system with stability augmentation. With a high thrust-to-weight ratio, it meets the performance demands of modern intercept missions.

### **Design Missions**



The Homelander is designed to meet the The Homelander performs the AIAA Point Defense Intercept mission which provides continuous air defense, responding to nearby threats and executing rapid intercept missions.

Intercept/Escort mission by providing rapid response to intercept incoming threats and close escort for high-value assets, while maintaining weapon readiness.

# Key Design Features/Characterstics

- High wing sweep to enhance topspeed performance
- Dual sweep angles to optimize both low and high-speed flight
- Tail offset to improve control authority and stability
- Single engine configuration to reduce cost
- Delta wing design for a balanced performance across various speeds
- Phased array satellite communications for reliable command and control
- Advanced flight control system with relaxed static margin for high maneuverability
- Simplified design with no high-lift devices
- Remote Operation





1.55

59971 ft

1098 miles

4.09 hrs



Takeoff and Landin				
Takeoff (Sea Level)		Takeoff (4000 ft)		
Takeoff Speed	389 ft/s	Takeoff Speed	476 ft/s	
Total Distance	2959 ft	Total Distance	4246 ft	
Ground Run	2818 ft	Ground Run	4216 ft	₩-
Transition	141 ft	Transition	30 ft	
Time to Takeoff	: 14.7 seconds	Time to Takeoff	: 17.63 seconds	



#### Landing (4000 ft) Landing (Sea Level) Landing Speed 421 ft/s Landing Speed 515 ft/s Total Distance 4924 ft **Total Distance** 8209 ft 3006 ft Air Distance 5340 ft Air Distance 2869 ft **Braking Distanc** 2928 ft Braking Distance Time to Land 23.4 seconds Time to Land : 31.9 seconds

# Longitudinal/Lateral Stability

Being a purpose-built interceptor that may have to fight adversary fighter that intrude US airspace like in incidents in Alaska, the Jetson Homelander is built with some degree of relaxed stability which enables it to perform aggressive maneuvers. With this unstable design, a control system was developed to maintain stable flight for the spiral mode.

Lateral-Direc	ctional Modes	Longitudinal Modes		
Spiral	0.0058	Phugoid	-0.010 ± 0.174i	
Rolling Convergence	-5.29	Short Period	-7.201 ± 0.888i	
Dutch Roll	-0.0126 ± 5.109j			

# Life Cycle Cost







Subsystems/Internal Layout

To meet performance and cost goals, the Homelander is powered by a U.S. fighter engine that meets thrust and mission performance requirements while minimizing cost. The F110-GE-132 Turbofan was selected for its developmental maturity, availability and ability to support the thrust-weight ratio.



THTUS	19,000 IDL (Intermediate)	
	32,500 lbf. (afterburner)	
Specific Fuel Consumption	0.65 lb/lb-hr (intermediate)	
	1.9 lb/lb-hr (afterburner)	
Mass Flow Rate	275 lb./sec	
Length	15.16 ft	
Weight	4050 lbs	
Bypass Ratio	0.68:1	
Max Diameter	3.875 ft	
Inlet Design	Length: 16.6 ft	
	Cross Sectional Area: 11.6 ft <sup>2</sup>	



All major subsystems - including fuel tanks, avionics, engine, and hydraulic components, are housed within the airframe. The internal structure is reinforced with ribs, spars, and stringer to efficiently manage the stresses experiences during high-performance combat maneuvers.

### Max Mach Service Ceiling Range Endurance