THE HOMELANDER INTERCEPTOR

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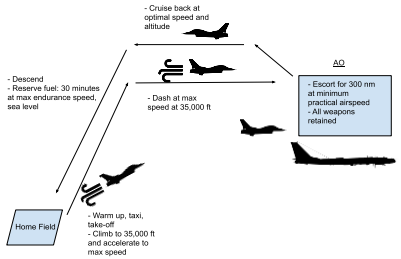
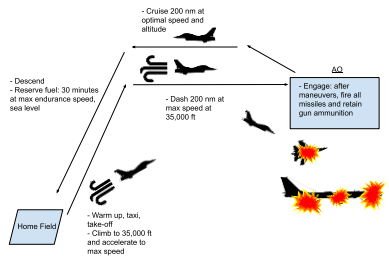
The Homelander Interceptor

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 fly-by-wire system with stability augmentation. With a high thrust-to-weight ratio, it meets the performance demands of modern intercept missions.

Design Missions



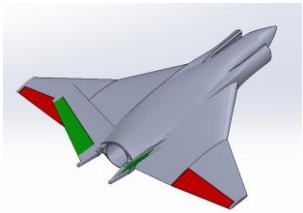
The Homelander is designed to meet the AIAA Point Defense Intercept mission which provides continuous air defense, responding to nearby threats and executing rapid intercept missions.

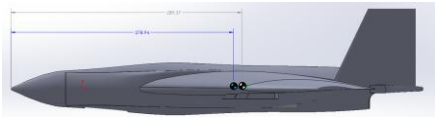


The Homelander performs the Intercept/Escort mission by providing rapid response to intercept incoming threats and close escort for high-value assets, while maintaining weapon readiness.

Key Design Features/Characterstics

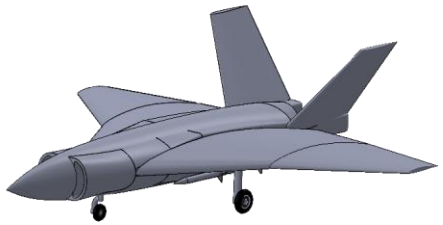
- High wing sweep to enhance top-speed performance
- Dual sweep angles to optimize both low and high-speed flight
- Tail offset to improve control authority and stability
- Single engine configuration to reduce cost
- Delta wing design for a balanced performance across various speeds
- Phased array satellite 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



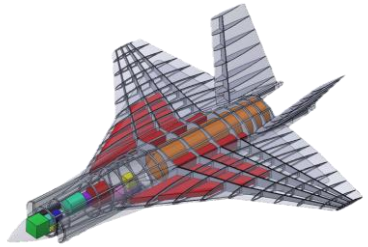


Final Configuration

Parameter:	Values
Length	43 ft
Wingspan	38 ft
Height	11 ft
Max Takeoff Weight	21318 lbs
Empty Weight	14559 lbs
Max Mach	1.55
Service Ceiling	59971 ft
Range	1098 miles
Endurance	4.09 hrs



Subsystems/Internal Layout



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.

Propulsion System

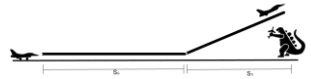
To meet performance and cost goals, the Homelander is powered by a U.S. fighter engine that meets thrust and mission performance requirements while minimizing cost. The F110-GE-132 Turbofan was selected for its developmental maturity, availability and ability to support the thrust-weight ratio.

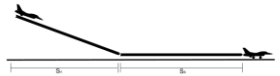
Thrust	19,000 lbf. (intermediate)
	32,500 lbf. (afterburner)
Specific Fuel Consumption	0.65 lb/lb-hr (intermediate)
	1.9 lb/lb-hr (afterburner)
Mass Flow Rate	275 lb./sec
Length	15.16 ft
Weight	4050 lbs
Bypass Ratio	0.68:1
Max Diameter	3.875 ft
Inlet Design	Length: 16.6 ft
	Cross Sectional Area: 11.6 ft²

Takeoff and Landing

Takeoff (Sea Level)	
Takeoff Speed	389 ft/s
Total Distance	2959 ft
Ground Run	2818 ft
Transition	141 ft
Time to Takeoff	: 14.7 seconds

Takeoff (4000 ft)	
Takeoff Speed	476 ft/s
Total Distance	4246 ft
Ground Run	4216 ft
Transition	30 ft
Time to Takeoff	: 17.63 seconds





Landing (Sea Level)	
Landing Speed	421 ft/s
Total Distance	4924 ft
Air Distance	3006 ft
Braking Distance	2928 ft
Time to Land	: 23.4 seconds

Landing (4000 ft)	
Landing Speed	515 ft/s
Total Distance	8209 ft
Air Distance	5340 ft
Braking Distance	2869 ft
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-Directional Modes	
Spiral	0.0058
Rolling Convergence	-5.29
Dutch Roll	-0.0126 ± 5.109j

Longitudinal Modes	
Phugoid	-0.010 ± 0.174i
Short Period	-7.201 ± 0.888i

Life Cycle Cost