

**C-390**  
**MILLENNIUM**



 **EMBRAER**



**THE FUTURE  
IS NOW**

07	C-390 MILLENNIUM
08	INCREASED MOBILITY
10	CARGO CAPACITY
12	RUGGED DESIGN
14	STATE-OF-THE-ART TECHNOLOGY
24	MISSION MODULES
32	PERFORMANCE AND SPECIFICATION
33	CERTIFICATION
34	EASIER TO MAINTAIN
36	LOGISTIC SUPPORT AND TRAINING
38	THE ADVANTAGES
40	EMBRAER



## THE NEW GENERATION TRANSPORT AIRCRAFT



## **C-390 MILLENNIUM**

**MORE PAYLOAD,  
MUCH FASTER, ANYWHERE**

THE ANSWER TO GLOBAL DEMAND FOR VITAL  
AIRLIFT CAPABILITIES AT AN AFFORDABLE COST

The C-390 MILLENNIUM is a new generation transport aircraft with multi-mission capabilities which combines a highly flexible platform with the lowest life cycle cost in the medium airlift market.

# INCREASED MOBILITY

**THE ABILITY TO PROJECT JOINT FORCES OVER GREAT DISTANCES IS ESSENTIAL TO EVERY MILITARY.** The C-390 MILLENNIUM offers unrivalled strategic, operational and tactical logistic support with unmatched mobility, speed and range, anywhere in the world.

Cruising at 0.80 Mach, the C-390 MILLENNIUM delivers more payload faster than any airplane in the medium airlift market.

## PERFORMANCE

Maximum Payload (Concentrated)	26 metric ton / 57,320 lb
Maximum Payload (Distributed)	23 metric ton / 50,706 lb
Maximum Cruise Speed	470 KTAS / Mach 0.80
Altitude Ceiling	36,000 ft
Range with 23 metric ton (50,700 lb)	1,470 nm
Ferry Range	3,370 nm

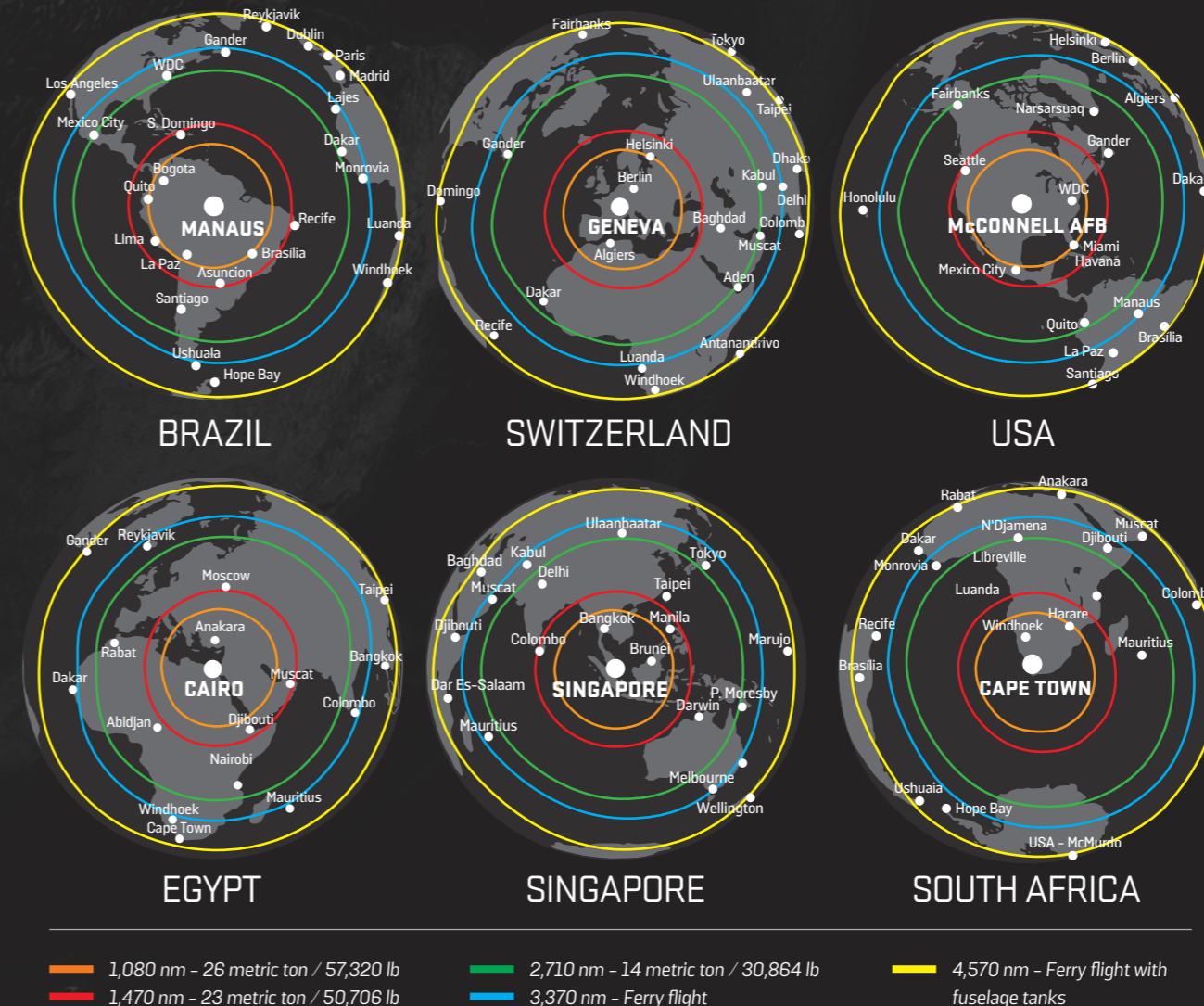
**THE JET ADVANTAGE: PRODUCTIVITY AND EFFICIENCY**

11.84 m  
[ 38 ft 10 in ]

35.05 m  
[ 115 ft ]

35.20 m  
[ 115 ft 5 in ]

## RANGE



## SAVING LIVES

500 METRIC TON AND 1,000 PASSENGERS

Fleet **6 x C-390 MILLENNIUM**

Round Trip Distance **1,350 nm**

Round Trip Flight Time **3h20**

**500 METRIC TON AND 1,000 PASSENGERS DELIVERED IN LESS THAN 2 DAYS**

**40% FASTER THAN MEDIUM LIFT TURBOPROP AIRCRAFT**

# CARGO CAPACITY

**THE C-390 MILLENNIUM IS CAPABLE OF CARRYING HEAVY COMBAT VEHICLES WEIGHING UP TO 26 METRIC TONS (57,320 LB).**

An unobstructed cargo compartment with a volume of 169 m<sup>3</sup> (5,970 ft<sup>3</sup>) was optimized to provide extra room for over and outsize cargo, accommodating combinations of vehicles, cargo on pallets, troops, medical patients and auxiliary fuel tanks, among other items.

## OPTIMIZED AERODYNAMICS

The C-390 MILLENNIUM aerodynamic configuration was carefully designed to reduce drag delivering high speed and high altitude cruise capabilities as well as provide enough lift for low speed operations such as helicopter aerial refueling and short airstrip operation.

To facilitate the boarding of taller vehicles, the C-390 MILLENNIUM is equipped with a long cargo ramp which reduces the cargo loading/unloading angle. The aircraft also features hydraulic stabilizer struts and a cargo winch to minimize time on ground.

## WIDE CARGO FOR MORE PAYLOAD

## CARGO CONFIGURATIONS

### SEVEN 463 L PALLETS



### 6 PALLETS AND 36 TROOPS



### 80 TROOPS OR 66 PARATROOPERS



### 74 STRETCHERS AND 8 ATTENDANTS

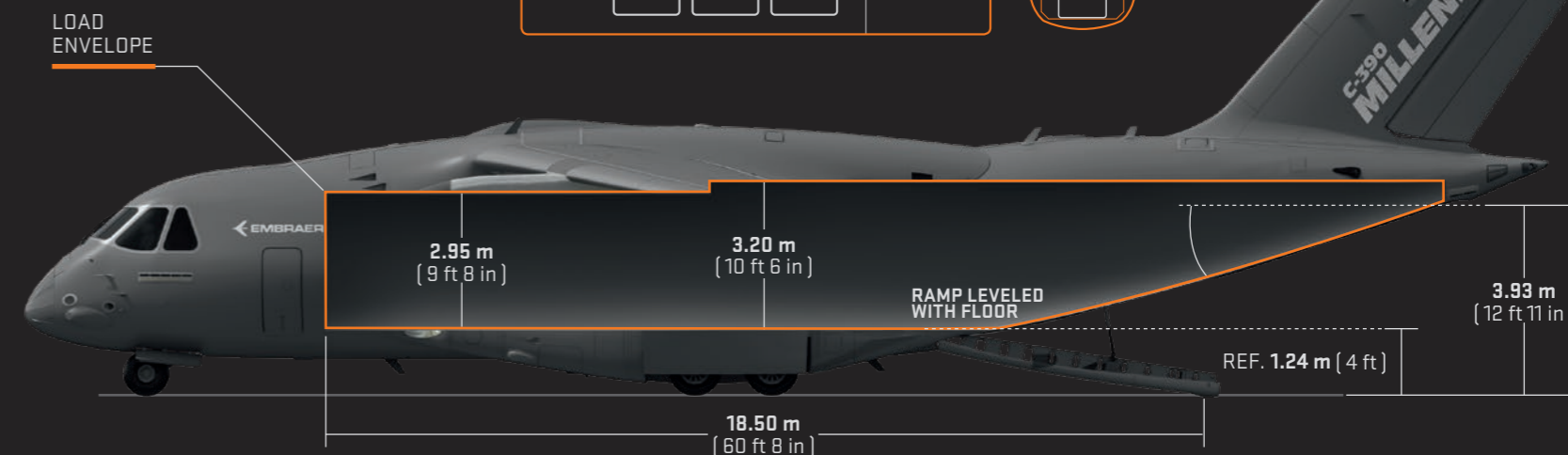
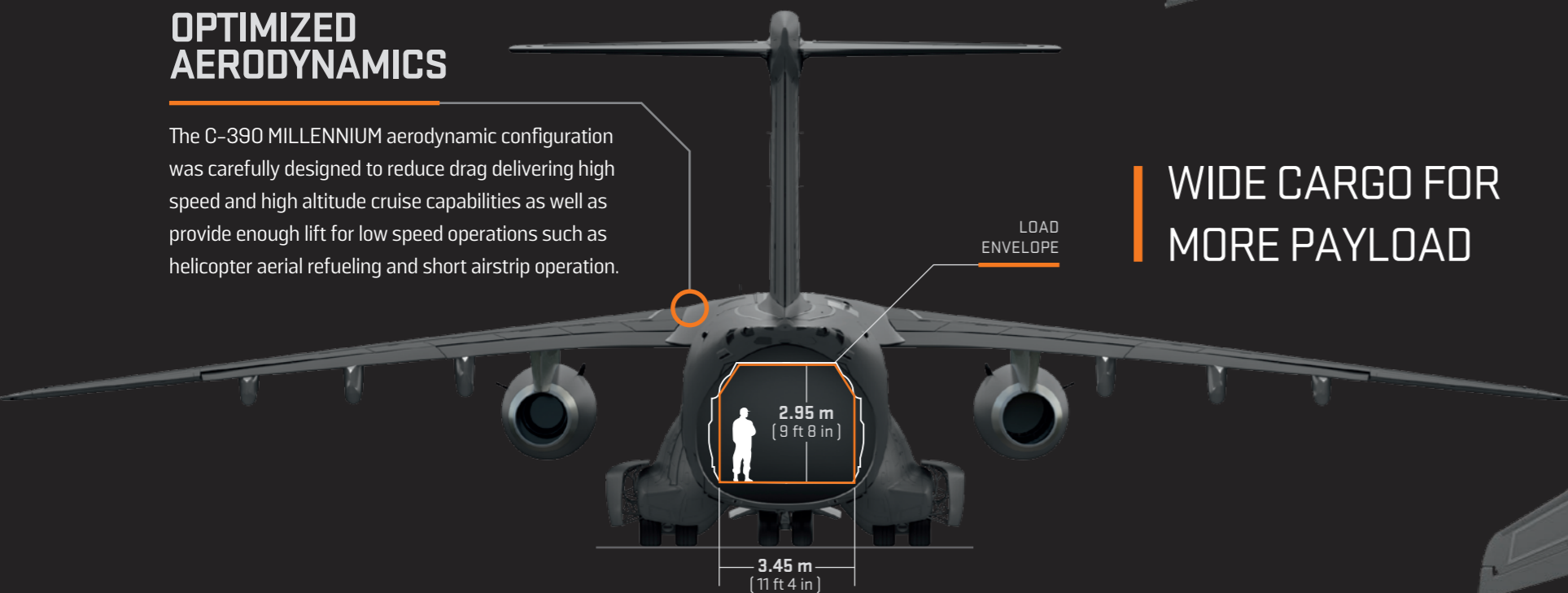


### 3 AUXILIARY TANKS



## CARGO POSSIBILITIES

- 1 x Boxer 8x8
- 1 x Stryker with armor
- 1 x BMP-3 Light Tank
- 1 x Patria AMV 8x8
- 1 x S70-A Blackhawk
- 2 x Oshkosh M-ATV Vehicles
- 2 x M113
- 2 x 20 ft ISO Containers
- 3 x Humvee



# RUGGED DESIGN

**DEVELOPED ACCORDING TO STRINGENT REQUIREMENTS, THE C-390 MILLENNIUM IS A TRANSPORT AIRCRAFT WITH MULTI-MISSION CAPABILITIES** with a rugged design that withstands operations from semi-prepared and damaged runways, as well as in harsh environments, varying from the hot and humid Amazon forest down to the freezing cold Antarctic continent, as well as in harsh environments, varying from the hot and humid Amazon forest down to the freezing cold Antarctic continent, as well as in hot and sandy desert conditions.

Small, austere and semi-prepared airfields are important operational

environments for military airlift aircraft. The operational capacity of the C-390 MILLENNIUM on semi-prepared and unpaved airfields is achieved through a combination of a highly capable structure, and landing gear designed to operate and reduce damage on soft unpaved airfields. The engines are mounted in a forward elevated position to prevent ingress of debris

The C-390 MILLENNIUM is capable of operating from the maximum (worst) semi-prepared runway defined by MIL-A-008866B and, for soft field operations, perform 10 passes at a CBR 4 airfield (loose fine sand or soft clay). The C-390 MILLENNIUM has excellent ground maneuverability, and can operate

on airfields with limited space for parking or maneuvering and no ground facilities.

The C-390 MILLENNIUM can normally operate from a 4,000 ft (CFL\*) semi-prepared soft airstrip (CBR-6: compacted sand-clay soils) carrying 12 metric ton of cargo to a distance of 500 nm.

## DESIGNED TO OPERATE IN SHORT, AUSTERE AND SEMI-PREPARED RUNWAYS

### SEMI-PREPARED AIRFIELD OPERATION

Worst Semi-Prepared Runway from MIL 8866B.

### DAMAGE TOLERANT DESIGN

Modern structural design – strong and durable airframe.

### IAE V2500 ENGINE

Minimum FOD ingestion. Optimum position (high ground clearance and forward mounted). Wide chord metallic fan blades. Part 33 Certified Engine.

### ANTARCTIC OPERATION

Operational from unpaved runways covered with ice and snow on the freezing cold Antarctic continent.

### LANDING GEAR

Low Resistance Airfields (CBR-4) Brake-by-Wire, Wheel-by-Wheel.

### ALL WEATHER

Designed for extreme climates; including hot and sandy desert conditions.

\* Critical Field Length

# STATE-OF-THE-ART TECHNOLOGY

**BUILDING OVER DECADES OF DEVELOPMENT EXPERIENCE, THE C-390 MILLENNIUM INCORPORATES THE MOST ADVANCED AND PROVEN TECHNOLOGIES AND DESIGN CONCEPTS.** Equipped with state-of-the-art technologies, the C-390 MILLENNIUM provides significantly reduced crew workload, efficiency and precision for the mission accomplishment.

## C-390 MILLENNIUM IS THE FUTURE



### FLY-BY-WIRE

The most capable flight control system in the segment allowing pilots to tailor the system to the mission and safely fly to the limits of the flight envelope with low crew workload.



### AVIONICS

Fully interactive and CNS/ATM compliant Rockwell Collins Pro Line Fusion Suite delivers intuitive Human Machine Interfaces, enhancing productivity and safety.



### OPTIONAL ADDITIONAL CREW MEMBER STATION

An optional third crew station in the cockpit, equipped with an integrated display, communication system and mission controls, supports efficient coordination on advanced missions including Search and Rescue and Aerial Refueling.



### EVS/ SVS

Dual Head-up Displays with Enhanced Vision System significantly improves situational awareness in critical operational scenarios, such as in low visibility conditions.



# STATE-OF-THE-ART TECHNOLOGY



## OMS

A fully integrated Onboard Maintenance System provides diagnostic information to the maintenance crews, facilitating troubleshooting activities, reducing downtime and cost and achieving airline level availability.



## STRUT STABILIZER

The Hydraulic Strut Stabilizer is an important feature for remote and autonomous operation. Commanded from the Loadmaster Station, it conveniently stabilizes the aircraft reducing time on the ground and minimising vulnerability in hostile environments.



## FOUR WHEELS BOGIE TYPE MAIN LANDING GEAR

A Four Wheel Bogie Type Main Landing Gear provides efficient flotation capabilities for operations on soft airfields (CBR-4) as well as shock absorbing capabilities for operations on damaged runways. It supports deployment of the aircraft to unassisted and remote locations.



## COMFORT

The C-390 MILLENNIUM Air Conditioning and Pressurization System are modern and efficient, with precise temperature and low cabin altitude controls: combined with the aircraft's wider cross section and a heated floor in the cargo compartment, comfort is enhanced during Medevac and Troop Transport Missions.



## TACTICAL RADAR

The C-390 MILLENNIUM is equipped with advanced Tactical Radar, featuring Spot SAR (Spotlight Synthetic Aperture Radar), weather, air-to-air, navigation, air-to-ground and high resolution modes.



## SELF PROTECTION

The C-390 MILLENNIUM Self-Protection System combines a broad range of Detection & Declaration devices (Radar Warning, Laser Warning and Missile Approach Warning) and capable Countermeasures (Chaff & Flare and DIRCM) enhancing the aircraft security in hostile scenarios.



## MISSION SYSTEMS

The C-390 MILLENNIUM integrates several sensors to provide truly advanced multi-mission capabilities. Tactical SAR Radar, EO/IR Pod and Mission Computers allow the flexible employment of the aircraft in different scenarios.



## CCDP

For the air delivery mission, the Continuous Computed Drop Point (CCDP) algorithm uses altitude, speed and wind to define the optimum release point to reach the drop zone. It allows for manual or automatic cargo release.



## NVIS

The C-390 MILLENNIUM interior, exterior and cockpit systems are fully Night Vision compatible.



## ADVANCED CARGO HANDLING SYSTEM

The advanced Cargo Handling System (CHS) provides high flexibility and productivity levels, merging a modern solution for software controlled cargo locking and proven cargo handling mechanical solutions. The CHS is designed to be easily and quickly reconfigured for different missions without the need for special tools. The cargo floor can be changed from flat to a roller configuration with the flip-over capability.

## THE CHS IS DESIGNED TO BE EASILY AND QUICKLY RECONFIGURED



## ROBUSTNESS & FLEXIBILITY

The cargo floor, an integral part of the C-390 MILLENNIUM main structure, is designed with the strength to transport heavy-tracked and wheeled vehicles of up to 26,000 kg (57,320 lb). An optimized tie-down grid of rings with 10,000 lb and 25,000 lb of restraint in any direction ensures quick configurations changes and great cargo load flexibility. The CHS features all the necessary accessories to facilitate cargo loading, restraining and offloading, such as tie-down rings, roller trays, cargo guidance and restraint systems. It is fully compatible with the existing military airlift equipment, such as type V platforms, 463L pallets, A-22 CDS bundles and ground support loaders.



## AIR DROP EFFECTIVENESS & PRECISION

The C-390 MILLENNIUM aerial delivery system provides remote and automatic release of cargo in flight at low and high altitudes. The C-390 MILLENNIUM is capable of:

LVAD* type-V platforms (single and multiple)	up to 41,887 lb
Aerial delivery of CDS (Container Delivery System)	up to 22 skid boards
Low Altitude Parachute Extraction (LAPES)	up to 22,046 lb

\* Low Velocity Aerial Delivery

Instead of pre-calculated tables, precise navigation is used to calculate the air release point with exceptional precision providing high mission effectiveness.



## LOADMASTER STATION

From a protected station, the Loadmaster can control and operate the Cargo Handling System, enhancing system situational awareness and allowing efficient handling and deployment of cargo.



# COMBAT OPS

Designed to accomplish tactical missions with the highest level of efficiency.

## BASIC DESIGN FEATURES

- Low speed: **120 KCAS**
- Tactical Descent: **12,000 ft/min**
- Steep Approach
- High Maneuverability: **Fly-by-Wire**
- Damaged Runway Operation

- Real Usage of aircraft limits:**
- Continuous 3 G envelope Protection
  - Short Field Length Capacity:**
  - Low speed capability, Advanced Brake System, High Efficiency Spoilers

# SURVIVABILITY

Basic characteristics of C-390 MILLENNIUM design also increase the aircraft survivability level.

## KEY POINTS

- High Speed similar to a fast jet: **Mach 0.8**
- High Altitude: **36,000 ft**
- Fuel Tanks Inertization: **OBIGGS**
- Redundancy and segregation for critical systems
- Night Vision Compatibility
- Tactical Radar

- Electro Optics/Infrared Pod
- Ballistic Protection (Armor 7.62 mm and 0.50 inch)
- Enhanced Vision System (EVS)
- HALO Oxygen Rack

- Radar Warning Receiver (RWR)
- Laser Warning System (LWS)
- Missile Approach Warning System (MAWS)
- Chaff & Flare
- Directional Infrared Counter Measures (DIRCM)

DETECTION & COUNTERMEASURES WITH 360° COVERAGE

# SELF PROTECTION SUITE

The C-390 MILLENNIUM can be equipped with a complete self protection suite (SPS) to increase survivability levels.



# MISSION MODULES

The C-390 MILLENNIUM aircraft is a highly flexible platform that combines multi-mission capabilities with the lowest life cycle cost in the medium airlift market.

THE C-390 MILLENNIUM PLATFORM OFFERS UNMATCHED VERSATILITY to configure the aircraft to accomplish a broader range of missions.

## ONE AIRCRAFT, MANY CAPABILITIES

**AERIAL ASSAULT** (high altitude)

**AERIAL REFUELING** (fighters and helicopters)

**AERIAL RESUPPLY**

**SPECIAL OPERATIONS**

**AERIAL FIREFIGHTING**

**AEROMEDICAL EVACUATION**

**HUMANITARIAN AID**

**SEARCH AND RESCUE**



REDUCING TIME ON THE GROUND AND IN THE AIR WILL IMPROVE MISSION SUCCESS AND HELP SAVING LIVES

## RAPID RECONFIGURATION

THE C-390 MILLENNIUM CAN BE RECONFIGURED for all missions in 3 hours or less.



## AIR-TO-AIR REFUELING

Day and night aerial refueling capability with observer windows and night vision cameras. The C-390 MILLENNIUM can be equipped with advanced refueling pods (Cobham 912E Series) that meet the high performance criteria of the aircraft providing a lightweight and efficient solution. Each pod provides fuel transfer up to 400 USgpm. Removable auxiliary fuel tanks can be installed in the fuselage to expand the aircraft fuel offload capacity or range performance.

## FROM FAST JETS TO HELICOPTERS

## THE C-390 MILLENNIUM CAN BE QUICKLY CONFIGURED FOR AERIAL REFUELING AS A TANKER (KC-390) AND AS A RECEIVER AIRCRAFT

## AERIAL REFUELING HIGH & LOW SPEED

The KC-390 MILLENNIUM is capable of refueling both fixed and rotary wing aircraft, operating at speeds from 120 KCAS to 300 KCAS and at altitudes from 2,000 ft to 32,000 ft. The KC-390 MILLENNIUM on-ground refueling capability can be used to refuel vehicles or forward operating bases.



## AEROMEDICAL EVACUATION

The C-390 MILLENNIUM provides support for ground operations or disaster relief missions transporting wounded survivors or casualties. The C-390 MILLENNIUM can be configured to carry up to 74 litters (STANAG 2040) and 8 additional members, including medical attendants and necessary life supporting equipment.

## THE C-390 MILLENNIUM CAN BE CONFIGURED TO CARRY UP TO 74 LITTERS



## SEARCH & RESCUE THE FIRST RESPONDER

During Search & Rescue missions, every minute counts to save lives. The C-390 MILLENNIUM turbo fan engines provide unmatched speed compared with other aircraft. The C-390 MILLENNIUM can be equipped with a complete set of equipment to support search & rescue missions.

- Removable Electro-Optical/Infrared pod (EO/IR)
- Four spotter positions
- Lateral litters and/or crew seats
- Removable internal fuel tanks to expand range or time on station



## HUMANITARIAN AID

The C-390 MILLENNIUM is designed, built and certified to deliver the fastest response for humanitarian assistance, disaster relief missions and stability operations. In a world where climate changes, conflicts, and disasters pose an increasing threat, being able to deliver fast and effective assistance determines success in saving lives, providing shelter and restoring services.



## AERIAL FIREFIGHTING

THE C-390 MILLENNIUM FLY-BY-WIRE FLIGHT  
CONTROL SYSTEM PROVIDES OUTSTANDING  
MANEUVERABILITY AT LOW SPEEDS

When equipped with a roll-on-roll-off firefighting system, the C-390 MILLENNIUM is an important aerial resource for firefighters in battling wildfires, dropping water or fire retardants. The C-390 MILLENNIUM fly-by-wire provides outstanding maneuverability at low speed and low altitude to fly over wildfire areas, increasing the mission efficiency.

# PERFORMANCE AND SPECIFICATION

## PERFORMANCE

Maximum Payload (Concentrated)	26 metric ton / 57,320 lb	
Maximum Payload (Distributed)	23 metric ton / 50,706 lb	
Wing Usable Fuel Capacity	23.9 metric ton	
Maximum Cruise Speed	470 KTAS/Mach 0.80	
Altitude Ceiling	36,000 ft	
Sea Level Cabin	18,000 ft	
Range with 26 metric ton (57,320 lb)	1,080 nm	
Range with 23 metric ton (50,700 lb)	1,470 nm	
Ferry Range	3,370 nm	
Ferry Range with internal tanks	4,570 nm	
Takeoff Dist (CFL, SL, ISA, 500 nm, payload 23 metric ton)	1,524 m	5,000 ft
Takeoff Dist (CFL, SL, ISA, 500 nm, payload 16 metric ton)	1,165 m	3,820 ft
Vref with 25 klb of useful load	116 KCAS	
Normal Landing Dist (SL, ISA, 26 metric ton)	1,000 m	3,280 ft

## DIMENSIONS

Length	35.20 m	115 ft 5 in
Height	11.84 m	38 ft 10 in
Wing Span	35.05 m	115 ft

### CARGO HOLD

Length (Floor + Ramp)	18.50 m	60 ft 8 in
Height (Minimum)	2.95 m	9 ft 8 in
Width	3.45 m	11 ft 4 in
Volume	169 m³	5,970 ft³

## MAIN SYSTEMS

- IAE V2500-E5 engines with 31,330 lb of takeoff thrust
- Rockwell Collins Pro Line Fusion Avionics System
- Gabbiano Tactical Radar T-20 from SELEX Galileo
- Cobham 900E Series Wing Air Refueling Pod
- Rafael Litening II electro-optical/infrared targeting pod

# CERTIFICATION

## DUAL CERTIFICATION APPROACH FROM THE BEGINNING

**THE C-390 MILLENNIUM IS FULL MILITARY CERTIFIED.** This hybrid process combines the efforts of both civil and military airworthiness authorities. This approach ensures the aircraft can safely accomplish all its military missions. The C-390 MILLENNIUM basic platform was certified by the Brazilian Civil Airworthiness authority in accordance

with FAA 14 CFR Part 25 standards. The military certification complements the civil certification with military standards, specifications and criteria in order to cover the military mission accomplishment, military items and systems.



# EASIER TO MAINTAIN

RELIABILITY, MAINTAINABILITY AND AVAILABILITY WERE MAJOR DESIGN REQUIREMENTS FOR THE C-390 MILLENNIUM. RELIABILITY THROUGH PROVEN SYSTEMS, REDUNDANT ARCHITECTURE AND ROBUST DESIGN DELIVER OUTSTANDING AVAILABILITY LEVELS

## LIFE CYCLE COST

Outstanding Cargo Capacity, Speed and Availability result in incomparable productivity, which when associated with low operation and maintenance costs, lead to reduced and affordable Life Cycle Costs.



### RELIABILITY

C-390 MILLENNIUM incorporates recognized proven technologies for redundant systems architectures, leading to unprecedented reliability levels in the segment.

### MAINTAINABILITY

The C-390 MILLENNIUM design made maintainability a major requirement. Employing the most efficient methods, such as MSG-3, tools and experience, the aircraft's maintenance is substantially facilitated and optimized to minimize downtime and cost.

### MAINTENANCE PLAN

In addition to reducing downtime, the optimized Maintenance Plan enhances the benefits of highly reliable systems and the airframe to more easily facilitate necessary inspections, checks and services. Years of interaction with air forces, systems manufactures and certification authorities in maintenance steering groups leveraged real maintenance experience to develop a platform easier to service and maintain.

### AVAILABILITY

The highest levels of reliability, combined with ease of maintenance delivers unparalleled availability in the medium airlift market. The optimized maintenance planning and on condition maintenance reduce substantially aircraft downtime and maintenance costs.



# LOGISTIC SUPPORT AND TRAINING

## MATERIAL SERVICES

Supply chain solutions, from transactional to outcome based supply packages. Services include: parts, component repairs and support equipment. Utilizing our vast global network we provide repair & overhaul, logistics operations, stock optimization and warehouse management.



## FLEET SERVICES

Specialized entry to service teams deliver mission readiness upon initial operation. World class on-site field service representatives assure fleet readiness anytime, anywhere. Ongoing support with optimized maintenance solutions.



EMBRAER TRAINING INFRASTRUCTURE OR ON SITE TRAINING DEVICES CAN BE USED FOR EXPEDITED OPERATIONAL AND MAINTENANCE CREW READINESS.

UNPRECEDENTED RELIABILITY LEVELS FOR THE **SEGMENT**, associated with a design optimized to reduce maintenance and combined with comprehensive support and materiel services support solutions. This delivers very high fleet availability and low life cycle.

## FLIGHT SERVICES AND TRAINING

Specialized Center providing Flight, Maintenance, and Specialized operator training solutions for initial and continued training needs.



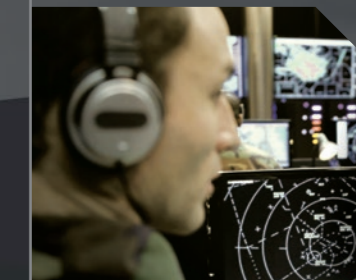
## FIELD SERVICES

Specialized field service technicians teamed with each Customer to maximize aircraft value through out the entire life cycle. Providing scalable sustainment solutions, from basic to turn-key performance based capabilities and services.



## INFORMATION SERVICES

Complete state-of-the-art information technology capability services to insure current, timely, and accurate information needed to keep the flight, operations, and maintenance crews equipped and informed at all times.



# THE ADVANTAGES

THE C-390 MILLENNIUM IS A HIGHLY CAPABLE AIRCRAFT. ITS COMBINATION OF SPEED, PAYLOAD AND RANGE GENERATE THE CORNERSTONES FOR EXCELLENT PRODUCTIVITY

**THE C-390 MILLENNIUM IS THE RIGHT MILITARY AIRLIFT FOR THIS CENTURY, DELIVERING MORE CAPACITY AND UNBEATABLE FLEXIBILITY.**

Embraer and its business partners have developed a solid industrial structure to build and support the C-390 MILLENNIUM for many decades to come, providing the necessary confidence for its long term life cycle. The C-390 MILLENNIUM is the next generation of medium size tactical transport aircraft and delivers a multitude of features in a single configurable platform; from air-to-air refueling to aerial firefighting.

The high performance aircraft capabilities, such as speed and payload, deliver superior productivity. Flying faster and delivering more cargo, the C-390 MILLENNIUM is the right sized platform for major deployment scenarios.

Minimized interventions and on condition maintenance combined with highly reliable systems and components support the reduced downtime and costs, contributing to outstanding availability levels and low life cycle costs.



# EMBRAER

**LEADER IN THE AEROSPACE AND DEFENSE INDUSTRY OF LATIN AMERICA,** Embraer Defense & Security offers a complete line of integrated solutions such as C4I (Command, Control, Communication, Computers, and Intelligence) applications, leading edge technologies in the production of radars, advanced information and communication systems, integrated systems for border monitoring and surveillance, as well as military and government transportation aircraft. With a growing presence on the global market, Embraer Defense & Security products are present in more than 60 countries.



MAY 2020

[www.embraerds.com](http://www.embraerds.com) | C-390.com

