



**STRATOS 714 TECHNICAL DESCRIPTION  
MARCH, 2012**

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THE DOCUMENT IS INTENDED TO PROVIDE A GENERAL DESCRIPTION ABOUT THE DESIGN, SYSTEMS, AND PERFORMANCE OF THE STRATOS 714. THE DOCUMENT IS INTENDED TO SUPPLEMENT THE PURCHASING AGREEMENT HOWEVER THE SECTION OF GUARANTEED PERFORMANCE ARE THE ONLY BINDING GUARANTEES HEREIN.

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# **1 Introduction**

The technical description applies to the standard configuration of the Stratos 714. The Stratos 714 is a high performance single engine jet design that comfortably seats four adults and cruises at high speeds on long range trips. An optional fifth seat is available.

It is low winged with a cruciform horizontal tail configuration. The airframe is predominately carbon fiber composite construction. Fuel is stored in the wings and a center tank that is attached directly to the wings. The landing gear is retractable tricycle type. A single high bypass Williams International FJ44-3AP turbofan engine is mounted in the fuselage.

The Stratos 714 will be certified under FAR 23 (and corresponding certifications as required) for VFR, IFR, day/night, RVSM, flight into known icing operations and single pilot operations.



## 2 Three View



### **3 Performance**

The performance data applies to the aircraft in the baseline configuration. Additional equipment including optional items offered by Stratos Aircraft may alter the performance listed. Performance listed unless otherwise noted is for zero wind and standard atmospheric conditions.

#### **3.1 Take-off Field Length**

1,970 ft (600 m) @ Sea Level, ISA Std day, MTOW

#### **3.2 Landing Field Length**

2,240 ft (683 m) @ Sea Level, ISA Std day, MLW

#### **3.3 High Speed Cruise**

415 KTAS (769 km/h) @ ISA, MTOW

#### **3.4 Range**

1,500 nm (2,800km) with 4 people and baggage

## **4 Performance Guarantees**

### **4.1 High Speed Cruise**

415 KTAS (769 km/h)  $\pm$  15 KTAS (28km/h) ISA Std day, 85% MTOW

### **4.2 Range**

1,500 nm (2779 km)  $\pm$  5% with max payload @ 400 knots (740 km/h)  $\pm$  15 knots (28 km/h)

### **4.3 Payload Load**

Max payload load is 900 lbs (408 kg)  $\pm$  5%

Note: Payload is defined to include all occupants including pilot and baggage.



## **5 Structure**

### **5.1 General**

The majority of the Stratos 714 airframe is carbon fiber composite. These composite materials are selected from a group of materials that have a database from extensive testing through the AGATE (Advanced General Aviation Transport Experiments) program and have an established history with the FAA. The advantages of using these materials include high strength-to-weight, optimized aerodynamics, and no fatigue or corrosion issues.



### **5.2 Major Parts**

The structures consist of bonded and assembled parts. The fuselage is assembled from outer skins and several bulkheads. The main cabin door is on the left side and there is an emergency escape exit on the right side.

The wing structure comprises two full span spars and several ribs. The winglets are removable. The main landing gear is mounted in the wing.

The horizontal stabilizer structure includes two full span spars and ribs. The horizontal stabilizer assembly is removable.

## **6 Maintenance**

High emphasis is placed on simple maintenance. All systems are designed for easy access or to be removable as one unit for easy servicing. A maintenance management system will be integrated in the avionics suite to track and alert for required maintenance.

Servicing arrangements with the manufacturers will be available for the engine. They offer a variety of fixed rate plans from basic to comprehensive servicing plans.

## **7 Styling Options**

There will be 3 standard exterior paint schemes to choose from. There will also be a choice of 3 standard interior styles. All interior materials will be high quality aircraft materials. Custom paint and interiors will be offered as options.



*Optional fifth seat*

## 8 Cabin

The standard cabin seating arrangement consists of a pilot and co-pilot's seat and two rear seats. A fifth seat will be offered as an option. The cabin length is 11.5ft (3.5 m) from the front pressure to the aft pressure bulkhead. There is a recessed center aisle to facilitate entering the two front seats. The cabin volume is 170 cubic feet (4.8 m<sup>3</sup>).

### 8.1 Seating

The seats mount to the floor and are independently adjustable fore and aft and recline. The seats have head rests and an inboard arm rest. The seats have an adjustable lumbar support. The front seats have a height adjustment.

### 8.2 Cabin Door

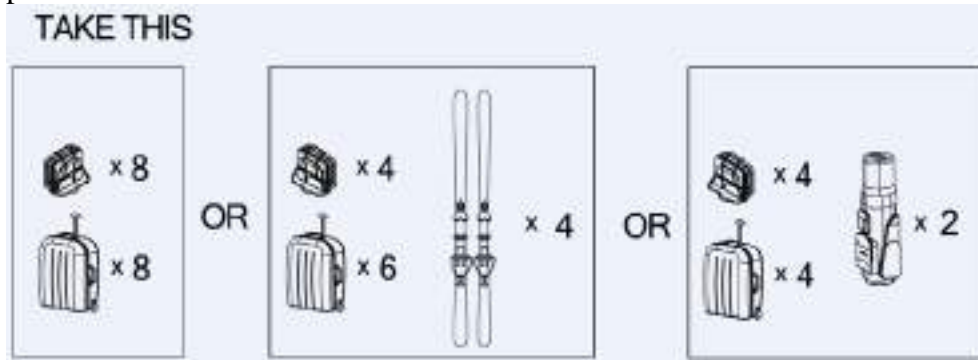
The cabin door is on the left side of the cabin between the front and aft seats. Separate stairs fold out for entering/exiting the cabin. The cabin door is 24" wide by 48" tall (61 cm by 122 cm).

### 8.3 Emergency Exit

There is a plug-type emergency exit on the right of the fuselage opposite the cabin door.

## 9 Baggage

There are two exterior baggage compartments and a small internal baggage area aft of rear seats. The exterior baggage compartments are in the fuselage but outside the pressure vessel.



### 9.1 Forward baggage compartment

The unpressurized forward baggage compartment can be accessed on the ground. It is approximately 5 cubic feet (0.15m<sup>3</sup>)

### 9.2 Aft baggage compartment

The unpressurized aft baggage compartment is just aft of the pressure bulkhead. It is approximately 30 cubic feet (0.85 m<sup>3</sup>). It is large enough to hold golf clubs. It is accessed from aft of the wing through an external baggage door.

### 9.3 Engine

The Stratos is powered by the highly efficient Pratt & Whitney Canada JT15D-5 having an EEC (Electronic Engine Control) system with hydro-mechanical back-up for easing pilot workload. The single engine turbine reduces operating cost significantly. With more than 6,600 engines produced having accumulated more than 41 million hours of flight time, the P&WC JT15D-5 has a proven track record which establishes its reliability. P&WC's industry-leading global customer support provides all the confidence that one can get from a leading engine manufacturer. With 2,900 lbs (12.9 kn) of static thrust, the Stratos 714 has a higher thrust to weight ratio than most VLJs.



## **10 Fuel System**

There are left and right wing fuel tanks integral to the wing structure and a center fuel tank in the fuselage outside the cabin pressure vessel. Fuel tanks will be filled by gravity through fuel filler caps. Fuel quantity in each fuel tank will be displayed on the center avionics multi function display. There will be both engine driven and separate electric fuel pumps for engine feed.

## **11 Electrical System**

The 28V electrical system is dual bus, dual feed and has dual batteries. This is essentially the equivalent of dual electrical systems, but that can be tied through the cross tie. The two systems are designed to operate independently. One side will be fed by the starter-generator and the other side by an alternator. The design is such that there is electrical and physical isolation between the two electrical systems.

A 28V DC ground receptacle allows powering of all systems for extended ground operations including the air conditioning. There will be 12V DC power outlets by each seat for portable electronic devices.

## **12 Flight Controls**

The unpowered primary flight controls will be actuated by side stick and rudder pedals. There will be dual controls for pilot and co-pilot. The rudder pedals will be adjustable. There will be a three axis electric trim system with position feedback. The flaps will be actuated by an electric motor and controlled by an indexed position switch.

## **13 Landing Gear**

The retractable landing gear is hydraulically actuated. The nose gear retracts forward into a compartment outside the pressure vessel. The main gear is of the trailing link type that is most favored by pilots due to being more forgiving and providing smoother rides while taxiing.

Each landing gear is equipped with a single wheel and tire. The main gear has disc brakes actuated by the toe brakes on the rudder pedals. The landing gear has both up and down locks. There is a separate emergency gear extension system.

The landing gear is covered by gear doors when the gear is retracted. The gear actuates by a gear switch.



## **14 Environmental Controls System**

The environmental control system (ECS) system comprises the heating/cooling and pressurization system.

### **14.1 Pressurization**

Bleed air is extracted from the compressor stages of the engine. The air is cooled through intercoolers and further cooled by the air-conditioning as necessary. The cabin pressure is set by a programmable controller, reducing pilot workload.

### **14.2 Air-conditioning**

The air-conditioning system (cooling) is fully electric and can be run on the ground with a ground power supply. Temperature is maintained by a programmable controller reducing the pilot workload.

## **15 Ice Protection**

The aircraft will be certified for flight into known icing. It will be equipped as required for certification including:

- Wing and horizontal stabilizer leading edge ice protection
- Intake ice protection
- Heated pitot tubes and static ports
- Heated angle of attack sensor
- Heated Pilot windshield

## **16 Lighting**

### **16.1 Exterior Lighting**

The exterior lighting includes:

- LED technology navigation and strobe lights
- High intensity discharge (HID) discharge landing light
- HID taxi light
- Left wing inspection light

### **16.2 Interior Lighting**

The interior lights include:

- Map lights for both cockpit seats
- Reading lights for each rear seat
- Front baggage compartment lights
- Aft baggage compartment lights



## 17 Avionics



The Stratos 714 will have an integrated all-glass avionics suite. There will be two primary flight displays and a single multi function display. The functions of the integrated avionics suite will satisfy all certification requirements and much more. The avionics suite will be easy to use and enhance situational awareness. Key features will include:

- Display of air data information
- Display of attitude, heading, and slip/skid.
- Weather and traffic information (Satellite based) (optional, subscription)
- Moving map.
- Airport diagrams (subscription)
- GPS-WAAS navigation.
- Flight director.
- Terrain awareness and terrain warning (subscription)
- Mode S transponder.
- Dual VHF communication radios.
- VOR/ILS navigation.
- Display of engine parameters.
- Warning systems (aural and visual) including master caution/warning.
- Autopilot (integral to the avionics suite).
- Intercom (for all occupants).
- ELT (406 MHz).
- Airborne weather radar (optional)

As of this revision of the technical description, the avionics suite supplier has not yet been selected. In addition to satisfying all the specific requirements, the avionics suite will be a proven system with an operational history.

## **18 Appendix; Abbreviations**

ELT: Emergency Locator Transmitter  
FADEC: Full Authority Digital Electronic Control  
HID: High Intensity Discharge  
IFR: Instrument Flight Rules  
ISA: International Standard Atmosphere  
kN: kilo-newton  
KTAS: Knots True Airspeed  
LED: Light Emitting Diodes  
MFD: Multi-function Display  
MLW: Maximum Landing Weight  
MTOW: Maximum Takeoff Weight  
NM: Nautical Miles  
PFD: Primary Flight Display  
RVSM: Reduced Vertical Separation Minimums  
VFR: Visual Flight Rules  
VHF: Very High Frequency (radio)