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## Pilatus PC-24

A Cross-Country Flight and  
Review of the Versatile Jet

Utilizing GA for  
Conservation Efforts

Garmin Rolls Out  
GTN Xi Series

A Guide to the  
Citation 560XL: Part 2



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# A Cross-Country Flight and Review of the **Pilatus PC-24**

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by **Rich Pickett**

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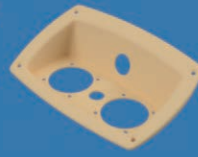
I have been flying the various models of the Pilatus PC-12 since 2006. Whether flying shorter hops or transporting people and supplies for disaster relief, the airplane has shown me amazing versatility. So, when Pilatus announced its PC-24 program and subsequently named it the Super Versatile Jet, I knew it would be a game changer.

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Many people wondered if Pilatus could deliver a business jet capable of taking off on some of the same unimproved strips that their PC-12 utilized. My feeling was if any manufacturer could accomplish this ambitious goal, it would be Pilatus. The company has a proven record of producing a wide range of turboprops, both civilian and military. And in 2018, the PC-24 received certification for dry sand and gravel. That certification recently expanded to grass, wet earth and snow-covered unpaved runways.

With an 18,300 maximum take-off weight (MTOW), a wingspan of nearly 56 feet, length of 55 feet and a tail height of over 17 feet, the PC-24 is impressive on the ramp. In this weight range, the single-pilot certified Pilatus PC-24 joins the Embraer 300E and Cessna Citation CJ4. Overall, the PC-24 is dimensionally larger than both of the others and has an MTOW slightly lower than the 300E and approximately 1,200 pounds higher than the CJ4. With a large cabin of 500 cubic feet, it also fills the market niche between the Embraer 300E and the Cessna Citation Latitude.

The mission specifications for the PC-24 are also impressive. The PC-24 has a service ceiling of 45,000 feet and can carry up to eight passengers and two crew at 0.74M. With four passengers, the PC-24 has an NBAA range of 2,000 nm. If you load the plane with the maximum payload of 2,500 pounds, you can still fly 1,163 nm between fuel stops.

### Cross-Country Flight

Earlier this year, a friend and PC-24 owner offered me the opportunity to fly his airplane on a cross-country trip. We were to depart Centennial Colorado airport (KAPA) early in the morning. It would be two passengers, pilots Gilbert Delaud and Kyle Saboda, and myself. With 4,500 pounds of fuel, the plane was at a ramp weight of 17,414 lbs.

After connecting the two ship batteries, we opened the cabin door, an air-stair design with the optional Entry Lighting Upgrade. Directly in front of the wide cabin door opening is a galley that contains

a sink as well as a lower cabinet that houses the externally-serviceable toilet. To the right is a large cabin with a flat floor and six passenger seats. The PC-24, like its cousin the PC-12, offers a variety of interior configurations, from six-seat executive to a 10-passenger commuter option to medevac. Each configuration is not mutually exclusive, offering the operator to convert the plane into several different forms depending upon the need of the mission.

Of course, my primary interest was the flight deck. I had previously spent time studying the cockpit with Pilatus' Chief Pilot, Jed Johnson, on another PC-24. Pilatus brands their entire cockpit, the Advanced Cockpit Environment (ACE). The cockpit is well designed and the most comfortable I've experienced in this class of aircraft. The seats are even more comfortable than the PC-12, and with my 6 feet and 3 inches in height, I had no issues with leg or headroom.

The PC-24, as with the PC-12 NG,

utilizes the Honeywell Primus Epic avionics suite. Pilatus' latest PC-12 NGX (highlighted in our December 2019 issue), and the PC-24 have implemented the latest Epic version 2.0. Information is presented to the pilots on four 12-inch displays.

There is ample elbow room for the pilots, excellent side and forward visibility, and highly efficient design in everything from the parking brake to the masks to the included power ports and pockets for EFBs. In a similar design to the PC-12, the jet features some of the controls, including the engine start controls, on an overhead panel.

### Preflight and Power

The exterior preflight is typical of most turboprops, with verification of control surfaces, clear vents, tires, brakes, and in the case of the PC-24, the single-point refueling system – powered by the two-battery hot battery bus. The PC-24 incorporates dual wheels on each landing gear, equipped with low-pressure tires.

This configuration allows the PC-24 to operate on unimproved airstrips.

Two Williams International FJ44-4A-QPM turboprops power the PC-24, each with 3,420 pounds of takeoff thrust. Based upon the FJ44-4A, which also powers the CJ4, there are some noteworthy differentiators. The engine features Williams' new Automatic Thrust Reserve (ATR). In the rare situation that thrust from one engine is compromised while at takeoff power, the thrust on the other engine is increased by 5 percent.

During the preflight, you notice the external differences, starting with the inlet designed by Williams, which incorporates additional noise attenuation features. Continuing the inspection, the typical pylon-mounted bleed air cooling inlets are gone, in favor of an integrated bleed air pre-cooler. This design also reduces drag. The PC-24 incorporates Williams' own FADEC and the innovative ground power capability of the FJ44-4A-QPM. Williams' Quiet Power

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Mode, or QPM, allows the operator to run one engine at a lower RPM and fuel flow with the associated noise reduction to serve as an APU. This is especially important at smaller airports or even dirt strips. Williams has calculated the average usage time of QPM in their calculations for inspections, and it does not affect the inspection intervals of 2,500 for a hot section inspection or 5,000 for an overhaul. One of our flights, with the right engine in QPM mode (only the right engine is enabled for this feature), the N2 percentage was reduced from 53.4 to 45.4, fuel flow decreased from 168PPH to 120PPH, along with a noticeable reduction in noise. In QPM mode, the generator has a lower maximum electrical load of 250 amps, more than ample for ground needs.

During the preflight you also notice the upper trailing edge of the nacelle extends past the lower edge. Williams has implemented their patented EX-ACT exhaust nozzle technology on the PC-24. This patented technology takes advantage of the Coanda effect. At relatively low speeds, such as takeoff, the exhaust stays attached on the upper surface of the rear nacelle, which bends it upwards, resulting in three degrees of passive nose-up thrust. At high speeds, such as cruise, the exhaust exits straight and is aligned with the flight path. Ingenious!

### Cargo Versatility

With a turn of the handle on the large 4-foot by 1-inch (1.25 m) wide cargo door, it opened to reveal an enormous 90 cubic feet baggage area, easily accessible from the ground or the cabin. This particular PC-24 has the adjustable cargo frame option with a secure curtain, which is required for commercial operations to preclude direct access by passengers in flight. It can be removed for alternative loading options. While this PC-24 is only flown under Part 91, it was useful as a way to organize the luggage while providing access in flight.

The capabilities of Pilatus' cargo flexibility were a key factor on my past PC-12 relief flights, enabling me

to load a donated X-ray machine with a forklift at Fort Lauderdale Executive (KFXE), and three hours later, unload it in Port-au-Prince, Haiti. With the additional speed of the PC-24, you can easily understand why it could be very useful in carrying cargo. Operators can quickly turn the aircraft into a variety of configurations (including medevac), supporting medical and relief services in remote areas of the world.

Once loaded and secured, it was time for our first leg. The PC-24 has a range up to 2,106 nm, however, we were stopping in Texas on our way to Florida. The flight plan distance was 750 nm and we planned on using 2,700 pounds of fuel on the two-hour flight. The weight and balance loading graph showed us well within the envelope. The PC-24 has a broad loading envelope, which is extremely useful when operating with a variety of configurations.

### Front Office

The avionics are extremely powerful, featuring a sophisticated integrated checklist system, complete with context-sensitive graphics. These system graphics appear as you proceed through the various checklists. Kyle and Gilbert were flying our first leg, allowing me the opportunity to observe the process. With the pre-start checklist complete, it was time to start our engines.

Battery voltages are checked. The thrust levers are confirmed at idle position, then the engine control was turned to "Run." After verifying the fuel pump is operating, you simply push the "Start" button.

We didn't need QPM mode this morning, so after waiting for the battery charge to drop below 150 amps, the left engine was started. The checklists are designed to minimize pilot workload, especially when flying single-pilot. The checklist items are grouped to ensure that only a few items need to be checked during Taxi, Before Departure and upon lineup. Even the ice protection check is simple. If anticipating icing conditions

*Pilatus PC-24 continued on page 22.*



## Cockpit

Pilatus brands its entire cockpit the Advanced Cockpit Environment (ACE), which includes an Inertial Reference System (IRS), Synthetic Vision System, Autothrottle, Graphical Flight Planning, Traffic Collision Avoidance System (TCAS II) and Localiser Performance with Vertical (LPV) guidance capability.



## Cargo

A wide cargo door reveals 90 cubic feet of baggage area, easily accessible from the ground or the cabin.

PHOTO BY AUTHOR



## Cabin

The flat floor in the cabin can be advantageous over drop-aisle designs, especially when changing seating and cargo configurations. Each passenger seat features quick-change capability enabling its quick addition or removal.

on departure, the checklist advises a 15-second delay at 60 percent N1 while in position. The IPS can be either operated in AUTO mode (with ice detectors), NAI or MAN (manual) modes. In AUTO, the PC-24 utilizes a number of sensors to determine when to activate the various systems, including the bleed-air heating on the engine inlet and wings, as well as the pneumatic de-ice boots on the stabilizer.

Climbing out of Centennial, our V<sub>1</sub> was 93 KIAS and V<sub>r</sub> 93 KIAS. At our elevation of 5,885 ft MSL, our takeoff distance was 3,219 feet at -3 degrees Celcius. The PC-24 was designed to have a very high pitch angle of 20 to 30 degrees on takeoff for obstacle clearance and noise reduction. Kyle and Gilbert elected to reduce it to a more manageable 10 to 15 degrees for better visibility over the nose and passenger comfort. The climb profile is 250 KIAS transitioning to 0.70 Mach. We were quickly at a cruise altitude of FL430 (below the maximum operating altitude of 45,000 feet). The cockpit is very quiet, with a noise level of 76-78 dB in cruise.

### Cabin Comfort

The flat floor in the cabin is a distinct advantage over drop-aisle designs, especially when changing seating and cargo configurations. The seats are highly adjustable and offer the ability to rotate and facilitate cross-aisle communication. Cabin lighting is fully adjustable, with beautiful overhead upwash as well as downwash side panel LED lights. This PC-24 is also equipped with the optional Integrated Cabin Management System (iCMS). In addition to an 800 GB media server for passenger entertainment, it also features control of the cabin environment, including lighting and temperature using a smart device. This control is provided through a cabin Wi-Fi router. When coupled with various communications options, passengers can truly be connected anywhere in the world.

In the PC-24, as with their PC-12, the standard toilet is placed forward between the cockpit and cabin. To use the flushing toilet, doors on either

# Pilatus PC-24 - By the Numbers

## Max Speed\*

440 KTAS / 427 KTAS / 392 KTAS  
FL280 / FL350 / FL450

## Fuel Flow Max Speed\*

1938 PPH / 1445 PPH / 940 PPH  
FL280 / FL350 / FL450

## Maximum Range

(LRC, NBAA IFR Reserves)  
2,106 NM

## Max Ramp Wgt

18,400 lbs

## MTOW (SL, ISA)

18,300 lbs

## Basic Operating Wgt\*\*\*

11,720 lbs

## Useful Load

6,880 lbs

## Fuel Capacity

5,964 lbs

## Max Fuel Payload\*\*

715 lbs

## Base Price

\$10,700,000

## As Flown

\$11,800,000

## Typically Equipped (2020 Deliveries)

\$11,134,960

\*Weight 17,000 lbs

\*\*Based on Max Ramp Wgt, one pilot

\*\*\*Standard Exec. Configuration, one pilot



end are extended for privacy, and a button is pressed to slide the seat forward. With the standard sink, it is a very useful design. One advantage of a forward toilet is it doesn't impact the cargo area or the use of multiple configurations.

We are cruising at 0.730 Mach to Texas. After takeoff, Kyle activated the autothrottles, which can manage the power through either FMS or manual modes. In FMS mode, the speed control is based upon the phase of flight. In manual mode, the pilot sets the desired speed. In some situations, such as mountain wave activity, it is preferred to set a specific speed slightly below  $V_{mo}/M_{mo}$  using the manual speed control to avoid occasional speed exceedances.

### Flying the PC-24

On our second leg, I took the controls under the guidance of Gilbert. After completing the checklists and starting the engines, it was time to taxi. It is very easy to maneuver

despite its size. After receiving the clearance limit times for departure at the uncontrolled airport, I lined up the PC-24 on the runway and moved the throttles to full power. At takeoff power, the plane accelerated quickly, with the callouts and rotation occurring in short order. The specifications state the maximum rate of climb is 4,000 FPM at MTOW, however, that is definitely a conservative number. Immediately after takeoff, I reduced power, lowered the nose for better visibility and watched the ground go by fast. With a relatively low initial altitude restriction, further reduction of power was necessary to keep below 250 KIAS.

I hand flew the airplane for a while and found it a dream to fly. The cockpit visibility is great with no limitations. After stabilizing the power and climb profile, I activated the autothrottles in FMS mode for the initial phase of our trip. In cruise, I selected the manual mode to set a

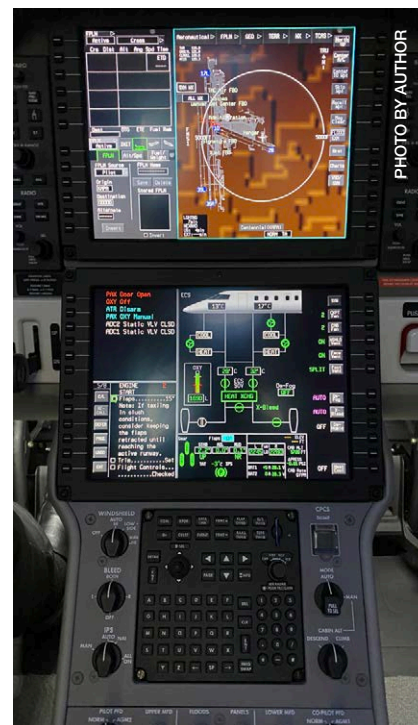


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The center console with the MFD and aircraft system synoptic on the lower display.

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particular airspeed just below  $M_{mo}$ . We were doing slightly better than the performance charts. At FL410, burning 1080 PPH, our true airspeed was 420 knots/0.735M.

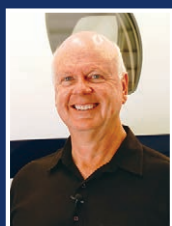
I've flown and taught a wide variety of avionics, and the Honeywell EPIC may not be the easiest to learn, but once you have mastered it, you realize the capabilities of the robust system. The Honeywell SmartView Synthetic Vision System (standard) is one of the best I've seen with a very intuitive set of flight path markers. The PC-24 ACE cockpit also features AHRS and one Inertial Reference System as standard, which is a unique offering in this class of aircraft. Additionally, this PC-24 was equipped with a number of avionics options including ADS-B In as well as TCAS-II, Pilatus' Wireless Connected Flight Deck, and others.

After a very smooth flight, evaluating all of the systems in a very comfortable cockpit, it was time to

descend. With the autothrottles and FMS automation, it was easy for us to prepare for landing. Our approach speeds were set, with  $V_{app}$  at 105 KIAS and  $V_{ref}$  at 95 KIAS. The dual-wheel trailing link gear design makes for very smooth landings.

### Summary

The Pilatus PC-24 is a great aircraft, capable of flying the widest variety of missions of any business jet to an array of landing spots with comfort and speed. The airplane can cruise up to 440 KTAS and land at less than 100 KTAS. The PC-24 comes standard with a 7-year/5,000-hour airframe warranty, two years on the avionics, and five years/2,000 hours on the engines. Pilatus offers a broad selection of options, from avionics to interiors, to fit virtually any transportation need. If you ordered a PC-24 now, the base price is \$10.7 million with typical aircraft priced around \$11.2 million.



With 11,000+ hours of piloting more than 100 aircraft model **Rich Pickett** still has a passion for flying. Rich holds an ATP, CFII SME, SES, glider licenses, and type ratings in the L29, L39, Citation 500/510s/525s, Eclipse 500S and DA10. His company, Personal Wings, provides training, mentoring and aircraft services. He is also a proud owner of an Eclipse and Cirrus SR22. You can contact Rich at [rich@personalwings.com](mailto:rich@personalwings.com).



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