

Propeller and Propeller Limits: The propeller is a variable pitch, feathering propeller, non reversing with composite blades, aluminium hub and composite spinner.

Type: HC-E5A-2 hub with 5 Hartzell E9193B, E9193K or E9193K*2 blades, constant speed type

**Type Certificate:
(Note 7)**

Federal Aviation Administration (FAA) TCDS No.: P20NE

Propeller Diameter: 238.8 cm (94")

Pitch settings at: (measured at 30 inch station)

- Minimum pitch: 12°
- Feathered: 86°

Underwing Stores:

The PC-21 may carry one of the following underwing stores configurations at the inboard and/or outboard pylon stations:

Underwing Stores Configuration 0.5:

- Two empty pylons at inboard station

Underwing Stores Configuration 1:

- Two External Smoke Generators (ESG) at inboard station

Underwing Stores Configuration 2:

- Two Underwing Fuel Tanks (UWT) at inboard station

Underwing Stores Configuration 3:

- Two Underwing Fuel Tanks (UWT) at inboard station; and
- Two External Smoke Generators (ESG) at outboard station

Underwing Stores Configuration 4:

- Two External Smoke Generators (ESG) at outboard station

Airspeed Limits (EAS):

Equivalent Air Speeds (EAS) at maximum operating weights in Acrobatic and Utility Category:

Max. operating speed (VMO)	370kt
Max. operating Mach no. (MMO)	0.72 M
Design diving speed (VD)	420kt
Design diving Mach no. (MD)	0.77 M
Design cruising speed (VC)	370 kt
Maneuvering speed (VO) ailerons	370 kt
Maneuvering speed (VO) rudder, elevator	220 kt

Max. speed with flaps and/or landing gear extended (VFT, VFL, VLE) 180 kt

Maneuvering Load Factor Limits (g):

In the Acrobatic Category (clean wing and underwing stores in configuration 0.5, 1 and 4)

Max. positive + 8.0 g
Max. negative - 4.0 g

In the Utility Category (underwing stores in configuration 2 and 3)

Max. positive + 5.0 g
Max. negative - 2.5 g

With flaps extended in take-off or land position

Max. positive + 4.0 g
Max. negative 0 g

Center of Gravity Limits:

In the Acrobatic Category, clean

[% MAC] with a straight line variation in between

Forward CG		Aft CG	at weight
Gear Down	Gear Up		
19.5 %	20 %	24 %	2,330 kg (5,136 lbs)
		28 %	2,450 kg (5,401 lbs)
19.5 %	20 %		2,750 kg (6,062 lbs)
21 %	21.5 %		3,000 kg (6,613 lbs)
21.5 %	21.5 %		3,000 kg (6,613 lbs)
24 %	24 %	28 %	3,100 kg (6,834 lbs)

In the Acrobatic Category, with underwing stores configuration 0.5 and configuration 1

[% MAC] with a straight line variation in between

Forward CG		Aft CG	at weight
Gear Down	Gear Up		
19.5 %	20 %	24 %	2,330 kg (5,136 lbs)
		28 %	2,450 kg (5,401 lbs)
19.5 %	20 %		2,750 kg (6,062 lbs)
21 %	21.5 %		3,000 kg (6,613 lbs)
21.5 %	21.5 %		3,000 kg (6,613 lbs)
22 %	22 %	28 %	3,100 kg (6,834 lbs)

In the Utility Category, with underwing stores configuration 2

[% MAC] with a straight line variation in between

Forward CG		Aft CG	at weight
Gear Down	Gear Up		
19.5 %	20 %	24 %	2,330 kg (5,136 lbs)
		28 %	2,450 kg (5,401 lbs)
19.5 %	20 %		2,750 kg (6,062 lbs)
		28 %	3,100 kg (6,834 lbs)
20 %	20.5 %		3,320 kg (7,319 lbs)
20.5 %	21 %		3,480 kg (7,672 lbs)
23.2 %	23.7 %	27 %	3,600 kg (7,936 lbs)

In the Utility Category, with underwing stores configuration 3
[% MAC] with a straight line variation in between

Forward CG		Aft CG	at weight
Gear Down	Gear Up		
21.2 %	21.5 %	28 %	2,555 kg (5,633 lbs)
21.3 %	21.5 %	28 %	3,400 kg (7,496 lbs)
22.1 %	22.3 %	26.5 %	3,750 kg (8,267 lbs)
25.3 %	25.5 %	26.5 %	3,900 kg (8,598 lbs)

In the Acrobatic Category, with underwing stores configuration 4
[% MAC] with a straight line variation in between

Forward CG		Aft CG	at weight
Gear Down	Gear Up		
19.5 %	20 %	28 %	2,503 kg (5,518 lbs)
19.5 %	20 %	28 %	2,750 kg (6,063 lbs)
21.5 %	22 %	28 %	3,100 kg (6,834 lbs)

Maximum Operating Weights:

In the Acrobatic Category (clean wing and underwing stores in configuration 0.5, 1 and 4)

Max. ramp weight	3,120 kg	(6,878 lbs)
Max. take-off weight	3,100 kg	(6,834 lbs)
Max. landing weight	3,100 kg	(6,834 lbs)
Max. zero fuel weight	2,750 kg	(6,062 lbs)
Min. flying weight config 0,1	2,330 kg	(5,136 lbs)
Min. flying weight config 4	2,503 kg	(5,518 lbs)
Max. weight of stores (including Pylon weight)		
Inboard Pylon	176 kg	(388 lbs)
Outboard Pylon	176 kg	(388 lbs)

In the Utility Category (underwing stores in configuration 2)

Max. ramp weight	3,620 kg	(7,964 lbs)
Max. take-off weight	3,600 kg	(7,937 lbs)
Max. landing weight	3,600 kg	(7,937 lbs)
Max. zero fuel weight	2,750 kg	(6,062 lbs)
Max. weight of stores	500 kg	(1,100 lbs)

In the Utility Category (underwing stores in configuration 3)

Max. ramp weight	3,920 kg	(8,642 lbs)
Max. take-off weight	3,900 kg	(8,598 lbs)
Max. landing weight	3,900 kg	(8,598 lbs)
Max. zero fuel weight	2,850 kg	(6,283 lbs)
Min. flying weight	2,555 kg	(5,633 lbs)
Max. weight of stores (including Pylon weight)		
Inboard Pylon	500 kg	(1,100 lbs)
Outboard Pylon	176 kg	(388 lbs)

Minimum Crew:	One pilot (Solo Flight is limited to front cockpit). 2 pilots are required for civil IFR operations if no autopilot is installed.				
Number of Seats:	The PC-21 has a tandem cockpit seating for pilot training. The rear seat can be used as a passenger seat. Ejection Seat, Cockpit Front: - P/N: Martin Baker MKCH16C-1 - Total Mass (without ISS Beam, Guide Rails and PSP): 79.3 kg (174 lbs) Ejection Seat, Cockpit Rear: - P/N: Martin Baker MKCH16C-2 - Total Mass (without ISS Beam, Guide Rails and PSP): 77.7 kg (171 lbs)				
Maximum Baggage:	Baggage compartment in the AFT fuselage left hand side: 25 kg (55 lbs) at 7100 mm				
Fuel Capacity: (at 0.806 kg/l)	The fuel system is fully automatic and maintains fuel supply during all operations. Fuel is contained in two integral wing tanks with a total usable capacity of 675 liters (see Note 1). The acrobatic tank allows 45 seconds of inverted flight (at less than zero g). Each optional Underwing Tanks has a usable capacity of 250l.				
Oil Capacity:	<table><tr><td><u>Total</u></td><td><u>Arm</u></td></tr><tr><td>19.4 liters</td><td>1.718 m aft of datum</td></tr></table>	<u>Total</u>	<u>Arm</u>	19.4 liters	1.718 m aft of datum
<u>Total</u>	<u>Arm</u>				
19.4 liters	1.718 m aft of datum				

Control Surfaces:

Wing flap		Take-off	20° ±1.0°	Landing	34° ±1.0°
Ailerons	Up		17.5° ±0.5°	Down	14° ± 1.0°
Aileron flettner tabs	Up		10.5° ±1.0°	Down	13.1° ±0.5°
*for fixed tab the deflection is 0° (post SB 27-015, see note 5)					
Spoilers	Up		38.5° - 42°		
Elevator	Up		23° ±1.0°	Down	16° ±1.0°
LH Elevator tab:					
Flettner def.	UP		12.6° ±0.4°	Down	8.3° ±0.4°
RH Elevator tab:					
Flettner def.	UP		14.4° ±0.4°	Down	10.8° ±0.4°
Trim def.	Up		7.5° ±0.5°	Down	3.5° ±1.0°
Airbrake comp.	UP		1.75° ±0.15°		
Rudder	Right		28° ±1.0°	Left	28° ±1.0°
Rudder trim tab	Right		4.5° ±1.0°	Left	19° ±1.5°
Airbrake	Down		65.5° ±2.0°		

See note 5.

Maximum Operating Altitude:

25'000 ft.
 The maximum operating altitude of 25'000 ft is included in the limitations section of the Airplane Flight Manual (AFM) Report No 02255.

An aural alert has been incorporated into the aircraft's information system, which will alert the pilot when the certified maximum altitude (plus tolerance) is exceeded (25'000 + 1'000 = 26'000 ft).

Datum:

3000mm in front of the firewall

Levelling Means:

Marks (colored rivet heads) on each side of the fuselage.

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Certification Basis:

US Federal Aviation Regulation Part 23, Acrobatic Category, including amendments 23-1 through 23-54, effective December 13th, 2000 and US Federal Aviation Regulation Part 23, Utility Category, including amendments 23-1 through 23-59, effective December 23rd, 2009, as defined in CRI A-1.

Swiss Regulation 748.215.1 dated 18. September 1995 regarding aircraft airworthiness (Verordnung über die Lufttüchtigkeit von Luftfahrzeugen –VLL).

Swiss Regulations 748.215.3 dated 10. January 1996 regarding emissions from aircraft (Verordnung über die Emissionen von Luftfahrzeugen –VEL).

ICAO Annex 16, Chapter 10.

Certification Review Items (CRI) :

- Regulations (CRI) FOCA No.:

- A-1 Certification Basis
- A-3 Environmental Standards
- A-4 Additional National Requirement for Operational Approvals
- A-5 Type Design Definition
- A-6 Swiss IFR Requirements

- Special conditions (CRI) FOCA No.:

- A-2 Maximum Operating Altitude
- B-2 Vibration and Buffeting
- C-1 Unsymmetrical Loads on Horizontal Tail
- C-3 Rudder, Elevator & Aileron Control Forces
- C-4 Sudden Deflection of Control Surfaces
- C-5 Horizontal Tail Maneuvering Loads
- C-8 Engine Mount Loads
- C-9 Fatigue Evaluation
- C-10 Rolling Maneuver
- D-2 Ejection System Related Subjects
- D-4 Pressurized Aerobatic Fuel Wing Tank/Air Separator
- D-6 Pressurized Cabin Sudden Decompression
- D-9 Bird Strike
- D-10 Elevator and Rudder Mass Balance Horns
- D-12 Powered Ailerons
- E-1 Engine Control
- F-5 Protection from HIRF
- F-6 Protection from the Indirect Effects of Lightning Strike
- F-7 Protection from the Direct Effects of Lightning (incl. Zone Definition)
- F-9 Head Up Display (HUD)
- H-1 Stores and their suspension
- H-3 Release of external stores

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- Equivalent Safety Findings (CRI) FOCA No.:

- B-1 Elevator Control Force in Maneuver
- B-3 Wings Level Stall with Underwing Stores Installed
- B-4 Longitudinal Trim in Descent with Underwing Stores Installed
- D-1 Emergency Exits (Ejection Seats)
- D-3 Seat Dynamic Testing, Head Injury Criteria
- D-5 Structural Integrity in Case of Fire
- F-13 AFM in Cockpit
- F-19 Aural Mute
- G-1 Ejection Seat & Canopy Fracturing System (Labels & Markings)
- G-3 Color Scheme of Emergency and Stores Management Controls within the Cockpit
- H-2 Stall speed with under wing stores

- Deviations (CRI) FOCA No.:

- C-2 Indication of Cabin Pressure Altitude of 10'000ft
- C-6 Cabin Pressure Altitude Rate-of-Change Indication
- D-8 Hand Fire Extinguisher
- D-13 Fasteners
- F-10 Switch labeling – Attention getters
- H-4 Exemption for PC-21 aircraft MSN 101 thru 127 and 153 thru 154 with lower prescribed wing skin thicknesses in several locations than those defined by standard industry practice for fuel system lightning protection, and when underwing stores are installed.
- H-5 Exemption to the requirement to retain fuel when landing on : paved runway with the most critical landing gear leg collapse with underwing tanks installed

Initial application for type certification to Swiss FOCA dated February 4th, 1999.

Kinds of Operation:

Eligible for the following kinds of operations when the appropriate equipment and instruments required by the operating requirements are installed, approved and in operable condition:

- VFR Day
- VFR Night
- IFR

Flight into known icing conditions is not approved.

Serial Numbers Eligible:

MSN 101 and up (see notes 3 and 4)

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Required Equipment:

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft. In addition the following is required:

Airplane Flight Manual (incl. Equipment List and applicable Supplements) Report No. 02255

AFM supplement for Operations with Underwing Stores Installed Report No. 02330

AFM supplement for Operations with External Smoke Generators Installed Report No. 02345

AFM supplement for Operations with High Output External Smoke Generators Installed Report No. 02376

AFM supplement for Operations with External Smoke Generators Installed on the Inboard or on the Outboard Pylons Report No. 02438

AFM supplement for Operations with Underwing Tanks on the Inboard Pylons and External Smoke Generators on the Outboard Pylons Installed Report No. 02437

AFM supplement for Operations with IFR Hood Report No. 02492

AFM supplement for Performance Data based on Drag Index Report No. 02555

AFM supplement for Operations with Empty Inboard Pylons Installed Report No. 02556

Service Information:

Aircraft Maintenance Manual (AMM): Report No. 02257
(Airworthiness Limitations Section FOCA approved)

Structural Repair Manual (SRM): Report No. 02258

Illustrated Parts Data (IPD): Report No. 02259

Placards:

All required placards must be installed in the proper locations.

Service Life Limits:

Life limited airplane components are listed in the Chapter 5 of the Aircraft Maintenance Manual (AMM), and must be replaced as indicated therein (see note 2)

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Notes for PC-21:

Note 1: Current weight and balance data, loading information, and a list of equipment included in empty weight must be provided for each airplane.

a) Basic empty weight includes engine oil of 19 kg (35 lbs) at 1.718m (65 in).

Note 2: Airworthiness Limitations are contained in the FOCA approved Airworthiness Limitations Section in the Chapter 5 of the PC-21 Aircraft Maintenance Manual (AMM). These Limitations may not be changed without FOCA approval.

This section contains mandatory maintenance actions called Certification Maintenance Requirements (CMR), which must be performed at specific intervals to compensate for latent failures, as identified during the System Safety Assessment process.

Note 3: MSN 101 and 102 are not eligible for a standard CofA without retrofit to production standard.

Note 4: MSN 101 thru 127 (included) and MSN 153 and 154 are not eligible for operations with underwing stores installed in accordance with the AFM Supplement Reports No. 02330 / 02345 / 02376 / 02437 / 02438, unless the aircraft is modified in accordance with the SB 57-003, or the limitation as stated in CRI H-4 is implemented in the applicable Airplane Flight Manual.

Note 5: The following mandatory modifications must be implemented:

ELEVATOR TABS INCREASED MASS BALANCE WEIGHT according to SB 27-014

AILERON TAB SYSTEM MODIFICATION according to SB 27-015

Note 7: As a Non-EASA product, FOCA recognized the engine and propeller original Type Certificates issued by TCCA and the FAA respectively for installation on the PC-21.

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