
Type Acceptance Report

TAR 19/21B/27

PIPER PA-36 PAWNEE BRAVE Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Piper PA-36 Pawnee Brave Series based on validation of FAA Normal Category Type Certificate number A9SO. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.191, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

NOTE: The information in this report was correct as at the date of issue. The report is generally only updated when an application is received to revise the Type Acceptance Certificate. For details on the current type certificate holder and any specific technical data, refer to the latest revision of the State-of-Design Type Certificate Data Sheet referenced herein.

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 19/21B/27 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically, the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

The report covers all models included on the State-of-Design type certificate which have been granted type acceptance in New Zealand.

2. Aircraft Certification Details

(a) State-of-Design Type and Production Certificates:

Type Certificate Holder: Piper Aircraft, Inc. (since August 7, 2006)
The New Piper Aircraft, Inc. (since July 14, 1995)
Piper Aircraft Corporation

Type Certificate: A9SO
Issued by: Federal Aviation Administration

Production Approval: FAA Production Certificate 206

(b) Models Covered by the Part 21B Type Acceptance Certificate:

- (i) **Model:** PA-36-285
- MCTOW: 3900 lb. [1769 kg]
4400 lb. [1996 kg] – Restricted Category
- Noise Standard: Not Applicable
- Engine:** Teledyne Continental 6-285-B, -BA, -C or -CA
Type Certificate: E12CE
Issued by: Federal Aviation Administration
- Propeller:** Hartzell HC-C2YF-1 ()F / F9587A
Type Certificate: P-920
Issued by: Federal Aviation Administration
- Hartzell HC-C3YF-1 ()F / F9684-1
Type Certificate: P25EA
Issued by: Federal Aviation Administration
- (ii) **Model:** PA-36-300
- MCTOW: 3900 lb. [1769 kg]
4400 lb. [1996 kg] – Restricted Category
- Noise Standard: Not Applicable
- Engine:** Lycoming IO-540-K1G5
Type Certificate: 1E4
Issued by: Federal Aviation Administration
- Propeller:** Hartzell HC-C2YF-1 ()F / F8475R
Type Certificate: P-920
Issued by: Federal Aviation Administration

Hartzell HC-C3YR-1 ()F / F8468A-6
Type Certificate: P25EA
Issued by: Federal Aviation Administration

(iii) Model: PA-36-375

MCTOW: 3900 lb. [1769 kg]
4800 lb. [2177 kg] – Restricted Category

Noise Standard: Not Applicable

Engine: Lycoming IO-720-D1CD or IO-720-D1C
Type Certificate: 1E15
Issued by: Federal Aviation Administration

Propeller: Hartzell HC-C3YR-1 ()F / F8475R
Type Certificate: P25EA
Issued by: Federal Aviation Administration

Notes: 1. Refer to FAA TCDS A9SO for specific applicability of engine and propeller combinations to individual aircraft models.

2. Refer to Advisory Circular 21-1 Appendix 2 for the New Zealand type acceptance status of any engines and propellers listed above.

3. Application Details and Background Information

The Piper PA36 Pawnee Brave was originally accepted into New Zealand under the provisions of NZCAR B.9. When CAR Part 21 was issued in July 1995 the transitional arrangements in Appendix A provided that where aircraft had a certificate of airworthiness before Subpart B came into force that type or model shall be deemed to have a type acceptance certificate. However there was no current airworthiness certificate for a PA-36 in force as at 30th June 1995, and therefore the type acceptance was no longer valid.

The first application for New Zealand type acceptance under Part 21B for the Piper Model PA-36-300 was from the importer, Kairanga Aviation Ltd, received 28 May 2019. An application for serial number 36-7760088 to become ZK-TVU would have been the first-of-type example, but this subsequently did not proceed. The Piper PA-36 Pawnee Brave Series is a single-seat strut-braced low-wing agricultural aircraft with a welded chrome-moly steel tube fuselage, fixed undercarriage and the hopper mounted in front of the pilot.

Type Acceptance Certificate Number 19/21B/27 was granted on 30 June 2020 to the Piper PA-36 Series based on validation of FAA Type Certificate A9SO. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The PA-36 was first announced in 1972 as a new version of the PA-25 Pawnee with a 285 hp Continental Tiara 6-285 flat-six engine. The aircraft had a new wing with removable leading edges, improved ventilation and heating system, and a larger standard hopper of 30 cubic feet. An optional 38 cu.ft. hopper was also available. The FAA determined that the airframe had changed so much that it required a new type certificate, and Piper therefore gave it a new Model number PA-36. In 1974 a new version was introduced with the 300 hp Lycoming IO-540 engine. The new model was called the PA-36 Pawnee Brave 300 while the original aircraft was redesignated the PA-36 Pawnee Brave 285. In 1977 the Brave 300 became the standard model and another more powerful model was introduced, the PA-36 Brave 375 with the 375 hp Lycoming IO-720 flat-eight engine.

The sole PA-36-300 Pawnee Brave in New Zealand was registered ZK-EIA in May 1977, while the first of ten PA-36-375 was registered ZL-EIG in June 1978.

The Piper PA-36 Series is also approved by the FAA in the Restricted category under type certificate number A10SO. However in New Zealand the PA-36 Series would operate in the agricultural role under Part 137 using the Overload Weight provisions of Appendix B.

4. NZCAR §21.43 Data Requirements

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents, or were already held by the CAA:

(1) State-of-Design Type certificate:

FAA Type Certificate Number A9SO (Normal Category)

FAA Type Certificate Data Sheet no. A9SO at Revision 10 dated August 1, 2006

- Model PA-36-285 approved May 31, 1972
- Model PA-36-300 approved November 22, 1974
- Model PA-36-375 approved October 4, 1977

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the PA-36 Series in the Normal Category under A9SO is FAR Part 23, effective February 1, 1965, including Amendments 23-1 through 23-6 dated August 1, 1967. This is an acceptable certification basis in accordance with NZCAR Part 21B Paragraph §21.41 and Advisory Circular 21-1A, because FAR Part 23 is the basic standard for Normal Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

Nil

(iv) *Airworthiness Limitations:*

See TCDS Note 8 for wing spar life limits.

(3) Aircraft Noise and Engine Emission Standards:

Not Applicable

(4) Certification Compliance Listing:

Report FT-64: Normal Category Certification, Flight Test Program – PA-36-285
 Report FT-64 Section II: Substantiation of the Lycoming IO-540-K1A5 Engine
 Report FT-82 Part II: Piper Model PA-36-300 Restricted Category Certification
 Report VB-226 Structural Substantiation Model PA-36 (Sections 1-10)
 Section VI – Flap Loads; Section VII – Control System Loads; Section VIII –
 Ground and Landing Gear Loads; Appendix A – Lycoming IO-540-K1A5
 Report VB-346 PA-36 Electrical Substantiation (Sections 1, 2 & 3)
 Report VB-346 Section IV: Powerplant Substantiation Data IO-540-K1A5 Engine
 Report VB-413 PA-36 Wing Fatigue Test Procedure
 Report VB-450 PA-36 Propulsion & Systems Substantiation, Restricted Category
 Report VB-451 Appendix A: Structural Considerations – Lycoming IO-540-K1A5
 Report 2112/VB-877 Structural Loads & Substantiation Data PA-36-375

Report 2111/FT-119: Restricted Category Flight Test Report
Report 2110/FT-117: Normal Category Flight Test Report
Report 2032: Airplane Flight Manual (Normal Category) Model PA-36-300
Report 2114/VB-884: Normal Category Airplane Flight Manual (PA-36-375)
Report VB-227 Section II – Fuselage Static Test PA-36-285
Report No. 2019 – Model PA-36 – Seat and Shoulder Harness Re-Test for the Australian Requirement (Re-numbering of Report VB-583)
Report No. 1993 – Model PA-36 – Compliance Check List FAR/CAR/Special Conditions (Re-numbering of Report VB-332.)

- (5) Flight Manual: Pilot’s Operating Manual Piper Pawnee Brave (PA-36-285) – Part Number 761-469 [serial number 36-7360001 thru 36-7460041] – CAA Accepted as AIR 3932.
This document includes the FAA-Approved Airplane Flight Manual: Report VB-645 (Normal Category) and VB-646 (Restricted Category)

Operating Manual Piper Pawnee Brave (PA-36-285) – Part Number 761 614 [s/n 36-756001 and up] – CAA Accepted as AIR 3923
This document includes the FAA-Approved Airplane Flight Manual: Report VB-682 (Normal Category) and VB-683 (Restricted Category)

FAA-Approved Pilot’s Operating Handbook – Piper Pawnee Brave 300 (Restricted Category) Report 2077 – CAA Accepted as AIR 3924

FAA-Approved Pilot’s Operating Handbook – Piper Brave 375 (Restricted Category) – Report 2125 – CAA Accepted as AIR 3925

NOTE: The Restricted Category POH is used in lieu of the Normal Category AFM because the POH includes the AFM and has full performance data.

- (6) Operating Data for Aircraft:

(i) *Maintenance Manual:*

Pawnee Brave – Service Manual – PA-36-285-300-375 – Part No. 761 471

(ii) *Current service Information:*

Service Bulletin and Service Letter Index – Part Number 762 332

(iii) *Illustrated Parts Catalogue:*

PA-36 Pawnee Brave (PA-36-285, PA-36-300, PA-36-375) Parts Catalog Part Number 761 470

- (7) Agreement from manufacturer to supply updates of data in (5), and (6):

Piper now provides CAA access to publications through the NAA portal

- (8) Other information:

Restricted Category Weight and Balance for Pawnee/Brave (PA-36-285)
Normal Category Weight and Balance for Pawnee/Brave (PA-36-285)

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 has been assessed as they are a prerequisite for the grant of an airworthiness certificate.

Civil Aviation Rules Part 26

Subpart B – Additional Airworthiness Requirements

Appendix B – All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements – CAM 8 Appendix. B # .35	Equivalent provisions to CAM 8 Appendix B Section .35 Protection are contained in FAR 23, paragraphs §23.561 Emergency Landing Conditions General; §23.785(h) Seats, berths, litters, safety belts and shoulder harnesses; §23.787 Baggage Compartments; and §23.831 Ventilation;

Compliance with the following additional NZ operating requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 91

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Seating and Restraints – Safety belt/Shoulder Harness	FAR §23.785
91.507	Pax Information Signs – Smoking, safety belts fastened	Not Applicable – Less than 10 passenger seats
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	FAR §23.1303(a) N/A – No Mach limitations FAR §23.1303(b) FAR §23.1303(c) FAR §23.1305(a) FAR §23.1305(d) FAR §23.1305(b)
91.511	Night VFR Instruments and Equipment	<i>Operational requirement – Compliance as applicable</i>
91.513	VFR Communication Equipment	<i>Operational requirement – Compliance as applicable</i>
91.517	IFR Instruments and Equipment	Not Applicable – Only approved for VFR Day & Night
91.519	IFR Communication and Navigation Equipment	Not Applicable – Only approved for VFR Day & Night
91.523	Emergency Equipment:	Not Applicable – Single-seat aircraft
91.529	ELT – TSO C126 406 MHz after 22/11/2007	<i>Operational requirement – Compliance as applicable</i>
91.531	Oxygen Indicators – Volume/Pressure/Delivery	<i>Operational requirement – Compliance as applicable</i>
91.533	Oxygen for non-Pressurised Aircraft:	Not fitted as standard
91.541	SSR Transponder and Altitude Reporting Equipment	<i>Operational requirement – Compliance as applicable</i>
91.543	Altitude Alerting Device – Turbojet or Turbofan	Not Applicable – Not turbo jet or turbofan powered
91.545	Assigned Altitude Indicator	Not Applicable – Only approved for VFR Day & Night
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

Civil Aviation Rules Part 137 – Subpart F – Instrument and Equipment

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
137.255	Seating and Restraints – Shoulder harness required	Shoulder harness with inertial reel fitted as standard. (See AFM Section 7.25 “Pilot Compartment” and IPC Fig.11)
137.257	Additional Instruments – Slip indicator required	<i>To be determined on an individual aircraft basis</i>
137.259	Additional equipment	See Appendix D compliance statements
	Appendix B – Overload Weight Determination	Design load factor is 3.8 – Maximum Recommended Weight Increase per CAR Part 137 Appendix B Fig.2 is 131% → For MCTOW of 3900 lb, Ag Operating Weight = 5109 lb. NOTES: 1. FAA TCDS A10SO states satisfactory operation in the Restricted Category has been demonstrated for the Models PA-36-285 and PA-36-300 at 4400 lb. [12.8% increase], and for the PA-36-385 at 4800 lb. [23% increase] at sea level under standard day conditions. TCDS Note 3 states “ Further weight increases should not be accomplished in the field. ” 2. On the basis of this limitation, the CAA would not accept any operation above this weight under Part 137 Appendix B unless the aircraft has demonstrated satisfactory operation at the higher weight as part of some Acceptable Technical Data substantiation program.

Appendix D – Instruments and Equipment Airworthiness Design Standards		
D.1	Seating and Restraints – Ultimate fwd inertia load of 12g	New shoulder harness/inertial reel by Pacific Scientific P/N 0101978-01 fitted and tested to meet the Australian forward load requirement of 25 g. (See Report VB-583)
D.3	Hoppers and spray tanks – 12g fwd/1.5 rear/1.0 sideways	Satisfactory by Inspection. (Hopper is located within the fuselage steel frame and mounted similarly fore and aft.)
D.4	Hopper upper level contents – Indication, density allowance	Hopper has viewing port visible in the cockpit
D.5	Jettison gear – 80% of maximum load in 5 seconds – simple to operate, single action required	Operational Requirement – Compliance as applicable
D.6	Markings/Placards – hopper or tank maximum loadings – representative jettison times – pax location, flight limitations	To be determined on an individual aircraft basis

NOTES: 1. A Design Rule reference in the Means of Compliance column indicates the Design Rule was directly equivalent to the CAR requirement, and compliance is achieved for the basic aircraft type design by certification against the original Design Rule.

2. The CAR Compliance Tables above were correct at the time of issue of the Type Acceptance Report. The Rules may have changed since that date and should be checked individually.

3. Some means of compliance above are specific to a particular model/configuration. Compliance with Part 91/137 operating requirements should be checked in each case.

Attachments

The following documents form attachments to this report:

Piper Drawing 39012 – Piper PA-36-300 Three View
 Piper Drawing 76926 – Piper PA-36-375 Three View
 Copy of FAA Type Certificate Data Sheet Number A9SO

Sign off



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 David Gill
 Team Leader Airworthiness

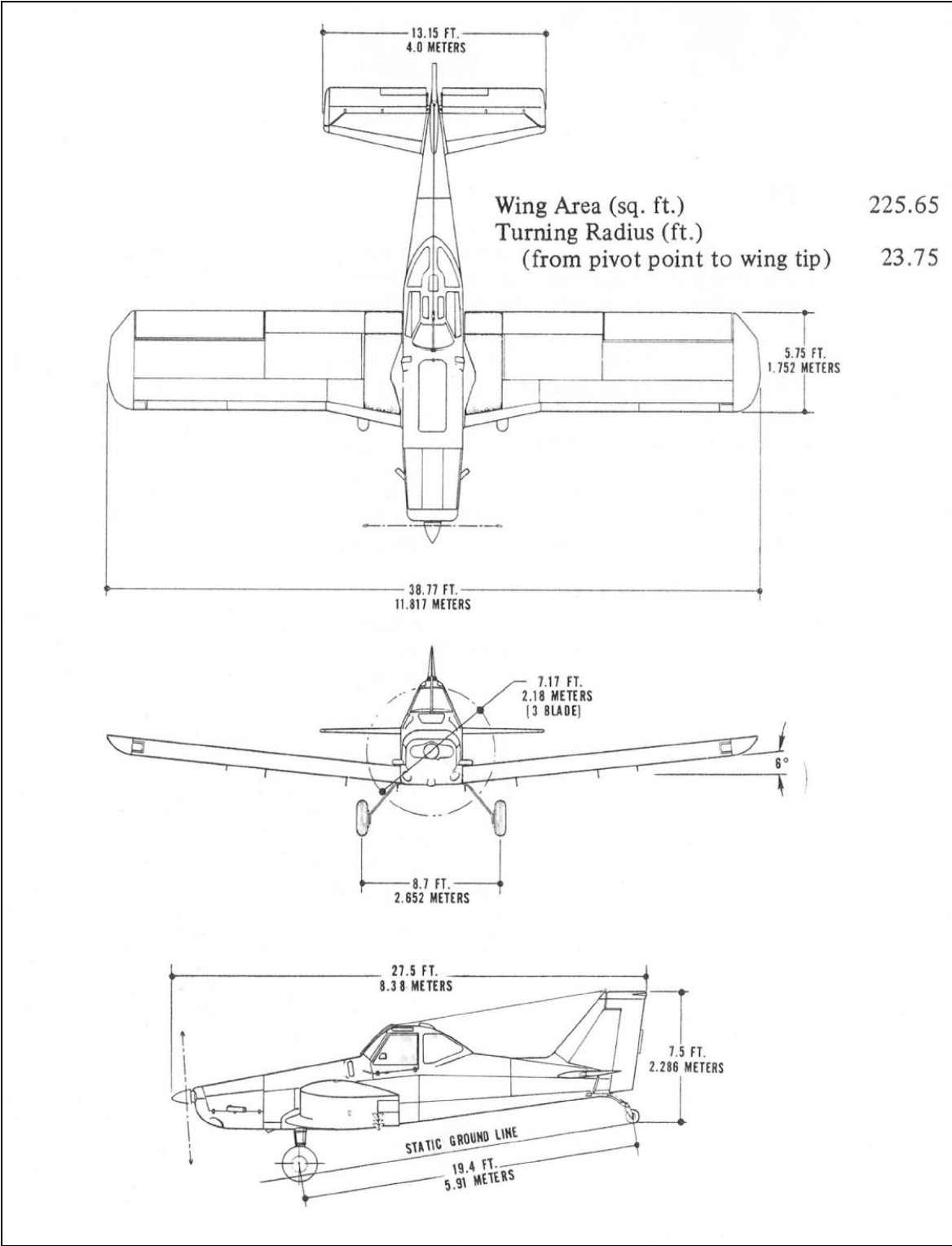


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 Checked – Jason Ashworth
 Acting Manager Airworthiness

Appendix 1

List of Type Accepted Variants:

Model:	Applicant:	CAA Work Request:	Date Granted:
PA-36 Series	Kairanga Aviation Ltd	19/21B/27	30 June 2020



Three-view Drawing – Piper PA-36-375