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# **Type Acceptance Report**

**TAR 99/11 – Revision 2**

**Cessna 180 Series**



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## Executive Summary

New Zealand Type Acceptance has been granted to the Cessna Model 180 Series based on validation of FAA Type Certificate number 5A6. There are no special requirements for import.

All models listed under the FAA type certificate have been type accepted in New Zealand, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.177, 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.)

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.18/21B/12 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. Appendix 1 details which models have been type accepted in accordance with the provisions of CAR Part 21B and which were certificated prior to that under NZCAR Section B.9 and are now type accepted under the transitional arrangements of Part 21 Appendix A(c).

## 2. Aircraft Certification Details

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

Manufacturer: Cessna Aircraft Company

Type Certificate Holder: Textron Aviation Inc. (since July 29, 2015)

Type Certificate: 5A6

Issued by: Federal Aviation Administration

Production Approval: Delegation Option Manufacturer No. CE-1  
FAA Production Certificate No.4

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

(i) **Model:** 180, 180A, 180B, 180C, 180D, 180E, 180F

**MCTOW:** 2550 lb. [1156 kg] – Model 180  
2650 lb. (1202 kg) – Model 180B through 180F

**Max. No. of Seats:** 4

**Noise Standard:** Not Applicable

**Engine:** Continental O-470-A or O-470-J – Model 180  
Continental O-470-K – Model 180 through 180B  
Continental O-470-L or O-470-R – 180C through 180F  
Type Certificate: E-273  
Issued by: Federal Aviation Administration

**Propeller:** Hartzell HC82XF-x/8x33  
Type Certificate: P-878  
Issued by: Federal Aviation Administration

Hartzell HCA2XF-1 or BHCA2XF-x/8x33  
Type Certificate: P-908  
Issued by: Federal Aviation Administration

McCauley 2A36C/90M-x  
Type Certificate: P-880  
Issued by: Federal Aviation Administration

McCauley 2A34C or 2A34C66/90A(T)-x  
Type Certificate: P3EA  
Issued by: Federal Aviation Administration

McCauley 2A34C203/90DCA-x  
Type Certificate: P3EA  
Issued by: Federal Aviation Administration

<b>(ii) Models:</b>	180G, 180H, 180J, 180K
MCTOW:	2800 lb. (1270 kg)
Max. No. of Seats:	6
Noise Standard:	FAR Part 36 (Model 180K)
<b>Engine:</b>	Continental O-470-L or O-470-R – Model 180G and 180H Continental O-470-R or O-470-S – Model 180J Continental O-470-U – Model 180K Type Certificate: E-273 Issued by: Federal Aviation Administration
<b>Propeller:</b>	McCaughey 2A36C/90M- <i>x</i> – Model 180G and 180H Type Certificate: P-880 Issued by: Federal Aviation Administration McCaughey 2A34C/90A- <i>x</i> or 2A34C66/90AT- <i>x</i> McCaughey 2A34C201/90DA- <i>x</i> or 2A34C203/90DCA- <i>x</i> Type Certificate: P3EA Issued by: Federal Aviation Administration McCaughey 2A34C204/90DCB- <i>x</i> – Model 180K Type Certificate: P3EA Issued by: Federal Aviation Administration

- NOTES:
1. Refer to FAA TCDS 5A6 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

There have been many examples of the Cessna 180 in New Zealand prior to 1995 when CAR Part 21 was introduced, and those particular model years or serial number ranges were therefore deemed to have a type acceptance certificate under the transitional arrangements of Part 21 Appendix A(c). The first application for New Zealand type acceptance under Part 21B was for the Model 180E, from the aircraft importer, Mr Kim Christophers dated 15 September 1998. The first-of-type example was ZK-TUA serial number 51144. The Cessna 180 series is a single-engine high-wing tailwheel all-metal utility monoplane designed as a larger and heavier companion to the earlier Cessna 170. It first flew in 1952 and was in production between 1953 and 1981.

Type Acceptance Certificate No.99/11 was granted on 21 September 1998 to the Cessna 180E based on validation of FAA Type Certificate 5A6. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

This report was raised to Revision 1 under CAA Work Request 12/21B/22 to include the 1978 180K model, and the opportunity was also taken to update to the latest format. The application was from Sunair Aviation Ltd dated 25 May 2012. The first-of-type example was ZK-DKP serial number 18052966, and type acceptance was granted on 4 July 2012.

This report was raised to Revision 2 to add all the other variants and model years of the 180 Series not previously included in the existing type acceptance. This was at the request of the type certificate holder, who has provided access to all technical publications.

The Cessna Model 180 was developed as a high-performance version of the 170 with six-cylinder engine and increased size vertical and horizontal tails. The 1952 prototype was a modified 170B, with a new engine, a rectangular fin with a dorsal fairing, and reshaped side windows. Other changes included improvements to the steering, cowling, optional wheel fairings, and a new wing tip design. The usual Cessna annual Model changes followed. A revised instrument panel was adopted for the 1959 180B. The 180E is the 1961 model 180 with minor changes from the previous 180D. These were mostly cosmetic but included dual-outlet ports in the fuel tanks and optional 84-gallon capacity tanks. The 1964 180G and on used the Model 185 fuselage, wings, landing gear and utility seat to offer 6-place seating with an additional cabin window on each side. The camber-lift wing with bonded leading edges was introduced on the 1973 180J. The 180K, the last production version, is largely similar to preceding models but introduced the O-470-U engine (no power increase) and was the first model certificated against noise requirements.

The first example of the Cessna Model 180 in New Zealand was serial number 30537, which was registered ZK-AZZ as one of a batch of six in August 1953.



## 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:

(1) State-of-Design Type certificate:

FAA Type Certificate Number 5A6

FAA Type Certificate Data Sheet No. 5A6 at Revision 68 dated Sept. 11, 2015

- Model 180 approved December 23, 1952
- Model 180A approved December 17, 1956
- Model 180B approved August 22, 1958
- Model 180C approved July 8, 1959
- Model 180D approved June 14, 1960
- Model 180E approved September 21, 1961
- Model 180F approved June 25, 1962
- Model 180G approved July 19, 1963
- Model 180H approved June 17, 1964
- Model 180J approved October 13, 1972
- Model 180K approved August 19, 1976

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the Model 180 Series up to the Model 180B is Part 3 of the Civil Air Regulations dated November 1, 1949, as amended by 3-1 through 3-8, except paragraphs §3.265 and §3.668 of 3-7. For the Models 180C through 180H this was updated to CAR 3 at Amendment 3-12, except again paragraphs §3.265 of 3-7 and §3.668 of 3-3. For the Models 180J and 180K CAR 3 subpart B was at Amendment 3-5. For the 1979 Model 180K and on FAR 23 paragraph §23.1559 effective March 1, 1978 was added.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 because CAR 3 was the predecessor of FAR 23, which is the basic standard for Normal Category aircraft called up under CAR 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:*

*1976 180J and 180K:*

CAR 3.757 Airspeed Indicator; CAR 3.778(a) Operating Limitations – The use of indicated instead of calibrated airspeed was accepted provided the approved calibration data given in the POH is available to the pilot. ASI calibration data must be predicated on flight test.

(iv) *Airworthiness Limitations:*

See the Aircraft Maintenance Manual.

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The Model 180K has been certificated for noise under FAR Part 36 including Amendments 36-1 through 36-6.

(ii) *Compliance Listing:*

See Advisory Circular 36-1H Appendix 7 and Flight Manual (Section 4).

Model:	MTOW:	Engine:	Propeller:	RPM:	Noise Levels	
					MdbA	CdbA
180K	2950	O-470-U	C2A34C204	2400	73.0	70.0

(4) Certification Compliance Listing:

- Cessna Report No. 700 – Type Record for: Model 180
- Cessna Report No. 722: Weight & Balance (Models 180, Landplane & Seaplane)
- Cessna Report No. 723: Flutter Survey
- Report S-107: Investigation of 3/4" Spring for Australian Agricultural Model 180
- Report No. 754: Take-Off, Landing and Level Flight Performance (180 Seaplane)
- Report 755: Take-Off, Landing and Level Flight Performance (Model 180)
- Cessna 180B – Type Record
- Cessna Report No. 702: Type Record – Fuselage Analysis (Cessna 180C)
- Cessna DM 180D-0: Type Inspection Report Model 180D
- Report No. S-180E-33: Structures Substantiation Summary (Model 180E)
- Report No. S-180G-0: Basic Data (Model 180G)
- Report No: S-180G-33: Structures Substantiation Summary (Model 180G) Cessna
- Report No: S-180H-33: Structures Substantiation Summary (Model 180H)
- Report No. S-180J-33: Substantiation, Critical Loads, Structural Materials Summary, Model 180J
- Report No. DM-180J-0: Certification of the 1975 Model Changes (Model 180J)

(5) Flight Manual:

<b>CAA AIR Number:</b>	<b>Cessna Publication:</b>	<b>Title:</b>
AIR 3068	P131-13	Model 180 (1953-1954) Owner's Manual
AIR 3069	P132-13	Model 180 (1955) Owner's Manual
AIR 3070	P133-13	Model 180 (1956) Owner's Manual
AIR 2991	P136-13	Model 180A (1957-1958) Owner's Manual
AIR 3037	P170-13	Model 180B (1959) Owner's Manual
AIR 3071	P198-13	Model 180C (1960) Owner's Manual
AIR 3039	P231-13	Model 180D (1961) Owner's Manual
AIR 2634	D127-13	Model 180E (1962) Owner's Manual
AIR 3705	D158-13	Model 180F (1963) Owner's Manual
AIR 3706	D210-13	Model 180G (1964) Owner's Manual
AIR 3036	D264-13	Model 180H (1965) Owner's Manual
AIR 3707	D335-13	Model 180H (1966) Owner's Manual
AIR 3049	D413-13	Model 180H (1967) Owner's Manual
AIR 3048	D521-13	Model 180H (1968) Owner's Manual
AIR 3708	D692-13	Model 180H (1969) Owner's Manual

AIR 3709	D765-13	Model 180H (1970) Owner's Manual
AIR 3710	D946-13	Model 180H (1971-1972) Owner's Manual
AIR 2760	D1000-13	Model 180J (1973) Owner's Manual
AIR 2761	D1020-13	Model 180J (1974) Owner's Manual
AIR 2764	D1040-13	Model 180J (1975) Owner's Manual
AIR 2002	D1061-13	Model 180J (1976) Pilot's Operating Handbook
AIR 2629	D1086-13	Model 180K (1977) Pilot's Operating Handbook
AIR 3221	D1113-13	Model 180K (1978) Pilot's Operating Handbook
AIR 2092	D1140-13PH	Model 180K (1979) Pilot's Operating Handbook
AIR 3711	D1175-13PH	Model 180K (1980) Pilot's Operating Handbook
AIR 2509	D1195-13PH	Model 180K (1981) Pilot's Operating Handbook

(6) Operating Data for Aircraft, Engine and Propeller:

(i) *Maintenance Manual:*

Cessna 100 Series (1953-1962) Service Manual – Publication D138-13  
 Cessna 100 Series (1963-1968) Service Manual – Publication D637-13  
 Cessna 180/185 (1969-1980) Service Manual – Publication D2000-13  
 Cessna 180/185 (1981-1985) Service Manual – Publication D2067-13

(ii) *Current service Information:*

Cessna Service Bulletins

(iii) *Illustrated Parts Catalogue:*

Cessna 180 (1953-62) and 182 (1956-61) Parts Catalog – Publication P259-12  
 Cessna 180/185 (1961-1973) Parts Catalog – Publication P527-12  
 Cessna 180/185 (1974-1985) Parts Catalog – Publication P699-12

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

Textron Aviation Publications are now available through the Textron Aviation Technical Publications website at <https://ww2.txtav.com>

(8) Other information:

Equipment List, Model 180H

Equipment List, Model 180J

## 5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 is a prerequisite for the grant of a type acceptance certificate.

### Civil Aviation Rule 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 Appdx. B # .35	Not Applicable – Agricultural Aircraft only

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 Rule Part 91

#### Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Seating and Restraints – Safety belt/Shoulder Harness	CAR §3.715
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	CAR §3.655(a)(1) Not Applicable CAR §3.655(a)(2) CAR §3.655(a)(3) CAR §3.672 CAR §3.655(b)(1)(iv) CAR §3.655(b)(1)(ii)
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	<i>Operational requirement – Compliance as applicable</i>
91.519	IFR Communication and Navigation Equipment	<i>Operational requirement – Compliance as applicable</i>
91.523	Emergency Equipment: (a) More Than 9 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 (b) More than 20 pax – Axe readily accessible to crew (c) More than 61 pax – Portable Megaphones per Table 9	Not Applicable – Less than 10 passenger seats Not Applicable – Less than 10 passenger seats Not Applicable – Less than 20 passenger seats Not Applicable – Less than 61 passenger seats
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	<i>Operational requirement – Compliance as applicable</i>
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

### Civil Aviation Rule Part 135

#### Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating / Restraints – Shoulder harness flight-crew seats	<i>Operational requirement – Compliance as applicable</i>
135.357	Additional Instruments (Powerplant and Propeller)	Has all instruments required under FAR §23.1305
135.359	Night Flight	<i>Operational requirement – Compliance as applicable</i>
135.361	IFR Operations	<i>Operational requirement – Compliance as applicable</i>
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>Operational requirement – Compliance as applicable</i>
135.367	Cockpit Voice Recorder	N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder	Not Applicable – Less than 10 passenger seats
135.371	Additional Attitude Indicator	Not Applicable – Not turbo jet or turbofan powered

- 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 then and compliance should be checked individually.
3. Some means of compliance above are specific to a particular model/configuration. Compliance with Part 91/119 operating requirements should be checked in each case, particularly oxygen system capacity and emergency equipment.

## Attachments

The following documents form attachments to this report:

- Three-view drawings Cessna Model 180 Skywagon
- Copy of FAA Type Certificate Data Sheet 5A6

## Sign off

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 David Gill  
 Team Leader Airworthiness

.....  
 Checked – Jason Ashworth  
 Team Leader Product Certification

## Appendix 1

### List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
180, A, B, C, D, H, J	AC 21-1.2/NZCAR Part 21 App. A(c)		
180K (1977, 1979, 1981)	AC 21-1.2/NZCAR Part 21 App. A(c)		
180E	K Christophers	99/21B/11	21 September 1998
180K (1978)	Sunair Aviation Ltd	12/21B/22	9 July 2012
180F, 180G	Textron Aviation Inc	18/21B/12	12 March 2019