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# **Type Acceptance Report**

**TAR 95/14 – Revision 1**

**CESSNA 175/R172K/172RG**



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## Executive Summary

New Zealand Type Acceptance has been granted to the Cessna Model 175 Series, R172K and 172RG based on validation of FAA Type Certificate number 3A17. There are no special requirements for import.

All models listed under the FAA type certificate have been type accepted in New Zealand, except for the P172D, which was a short-lived model, and the R172E through R172H, which were military versions. There is also a 1974 Model R172J on the type certificate, but only a single example was produced. The 175 Series, R172K and 172RG 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. 95/14 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 that 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: 3A17  
Issued by: Federal Aviation Administration

Production Approval: PC 4 / Delegation Option Manufacturer No. CE-1

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

- (i) **Model:** 175, 175A, 175B, 175C
- MCTOW: 2350 lb. [1066 kg]  
2450 lb. [1111 kg] – Model 175C
- Max. No. of Seats: 4
- Noise Standard: Not Applicable
- Engine:** Continental GO-300A GO-300C, GO-300D or GO-300E  
Type Certificate: E-298  
Issued by: Federal Aviation Administration
- Propeller:** McCauley 1A175/FC or 1B175MFC  
Type Certificate: P-857  
Issued by: Federal Aviation Administration
- McCauley 2A31C21/84S [Model 175C]  
Type Certificate: P-919  
Issued by: Federal Aviation Administration
- (ii) **Model:** R172K
- MCTOW: 2550 lb. [1156 kg]
- Max. No. of Seats: 4
- Noise Standard: FAR Part 36
- Engine:** Continental IO-360-K or IO-360-KB  
Type Certificate: E1CE  
Issued by: Federal Aviation Administration
- Propeller:** McCauley 2A34C203/90DCA-14  
Type Certificate: P3EA  
Issued by: Federal Aviation Administration

(iii) **Model:** 172RG

MCTOW: 2650 lb. [1202 kg]

Max. No. of Seats: 4

Noise Standard: FAR Part 36

**Engine:** Lycoming O-360-F1A6  
Type Certificate: E-286  
Issued by: Federal Aviation Administration

**Propeller:** McCauley B2D34C220/80VHA  
Type Certificate: P7EA  
Issued by: Federal Aviation Administration

### 3. Application Details and Background Information

The application for New Zealand type acceptance of the Model 175 was from Mr B Ruffell dated 2 October 1995. The first-of-type example was serial number 55658, registered as ZK-BCR. The Model 175 is a high-wing all-metal four-seat single-engined light aircraft with fixed undercarriage.

Type Acceptance Certificate No. 95/14 was granted on 12 January 1996 to the Cessna 175 based on validation of FAA Type Certificate number 3A17. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

Revision 1 to this report added all the other variants and serial number ranges of the Models 175, R172K and 172RG not previously included. This was at the request of the type certificate holder, who has provided access to all technical publications.

The Cessna Model 175 is basically a Model 172 fitted with a Continental 175hp GO-300 geared-engine in a redesigned cowling. However it did not prove popular and was only produced for four years. There have been no model 175s previously in NZ although a full range of type data is held.

Also on the type certificate are the R172 versions, which were the Model 172 fitted with a more powerful 210 hp O-360 engines for military customers. A single civil R172J was produced with the 210 hp engine before Cessna introduced the R172K “Hawk XP”. In this version the O-360 engine was derated to 195 hp at 2600 RPM for noise reduction. The 172RG “Cutlass” is another Model on this type certificate. This is the 172 fitted with an electro-hydraulically operated landing gear similar to the 177RG and 180 hp engine.

The first example of the R172K in New Zealand was serial number R172-2019 registered ZK-EJI in December 1976, while the first example of the Model 172RG was serial number 172RG-0192 registered ZK-ETG in February 1980.



## 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 3A17

FAA Type Certificate Data Sheet no. 3A17 at Revision 47 dated July 29, 2015

- Model 175 approved January 14, 1958
- Model 175A approved August 24, 1959
- Model 175B approved June 14, 1960
- Model 175C approved September 18, 1961
- Model R172K approved September May 28, 1976
- Model 172RG approved June 1, 1979

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the Models 175 and R172 Series is Part 3 of the Civil Air Regulations dated May 15, 1956. (For the 1979 on Model R172K FAR 23 paragraph §23.1559 was added.) For the 172RG some additional paragraphs of FAR 23 were added, as noted on the TCDS.

This is an acceptable certification basis in accordance with NZCAR Part 21B paragraph §21.41 and Advisory Circular 21-1, because CAR 3 was the predecessor of FAR Part 23 which is the basic standard for small airplanes called up under Appendix C. There are no non-compliances and no special conditions have been prescribed by the Director under paragraph §21.23.

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

*R172K and 172RG:*

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.

*172RG:*

CAR 3.430 Fuel System – The fuel system must be arranged so no pump can draw fuel from more than one tank at a time, which is not complied with when the selector is on both. This was accepted because the fuel system has design provisions to prevent introducing air into the system.

FAR 23.729(e) Landing Gear Indication System – The elimination of three switches and associated rigging to improve reliability was accepted on the basis of secondary indications that the gear is not retracted, such as buffet and reduced airspeed; and the high wing configuration of the aircraft provides for visual confirmation of the main gear position.

(iv) *Airworthiness Limitations:*

See Aircraft Maintenance Manual

(3) Aircraft Noise Standard:

(i) *Environmental Standard:*

The Model R172K has been certificated for noise under FAR Part 36, including Amendments 36-1 through 36-6. For the Model 172RG this was updated to include Amendment 36-10.

(ii) *Compliance Listing:*

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

Model:	MTOW:	Engine:	Propeller:	RPM:	Noise Levels	
					MdbA	CdbA
R172K	2550	IO-360-K	2A34C203	2600	74.7	74.1
172RG	2650	O-360-F1A6	B2D34C220	2700	73.4	73.9

(4) Certification Compliance Listing:

The CAA already held a full set of type design reports for the Cessna 175/A/B/C:

Cessna Report No. S-175E-33: Structures Substantiation Summary

Cessna Report No. S-175E-0: Basic Data

Cessna Report No. S-175C-33: Structural Substantiation Summary

DM 175C-0: Type Inspection Report, 175C

Cessna Report S-R172G-33: Structures Substantiation Summary R172G

DM- R172G-0: Certification of Gross Weight Increase for 1970 Model R172G

S-R172K-33(77): Substantiation, Critical Loads & Structural Materials Summary

Cessna Report DM-R172K-0: Certification of the 1977 Model R172K,

- Addendum 2: Certification of the 1979 Model R172K

- Addendum 4: Certification of the 1980 Model R172K

- Addendum 6: Certification of the 1981 Model R172K

(5) Flight Manual:

<b>CAA AIR Number:</b>	<b>Cessna Publication:</b>	<b>Title:</b>
AIR 2543	P175-13	Model 175 Owner's Manual
AIR 3451	P197-13	Model 175 (1960 175A) Owner's Manual
AIR 3452	P225-13	Model 175 (1961 175B) Owner's Manual
AIR 3453	D125A-13	Model 175 (1962 175B) Owner's Manual
AIR 2016	D1083-13	1977 R172K Hawk XP Pilot's Operating Handbook
AIR 2682	D1110-13	1978 R172K Hawk XP Pilot's Operating Handbook
AIR 2683	D1139-13PH	1979 R172K Hawk XP Pilot's Operating Handbook
AIR 2233	D1173-13PH	1980 R172K Hawk XP Pilot's Operating Handbook
AIR 2173	D1193-13PH	1981 R172K Hawk XP Pilot's Operating Handbook
AIR 2119	D1174-13PH	1980 172RG Pilot's Operating Handbook
AIR 2166	D1194-13PH	1981 172RG Pilot's Operating Handbook
AIR 3675	D1213-13PH	1982 172RG Pilot's Operating Handbook
AIR 3676	D1232-13PH	1983 172RG Pilot's Operating Handbook
AIR 3677	D1253-13PH	1984 172RG Pilot's Operating Handbook
AIR 3678	D1274-13PH	1985 172RG Pilot's Operating Handbook

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

(i) *Maintenance Manual:*

Maintenance Manual Cessna 100 Series 1953-1962 – Publication D138-1-13

Cessna R172 (1977-1981) Service Manual – Publication D2027-13

Cessna 172RG (1980-1985) Service Manual – Publication D2066-13

Overhaul Manual for Continental GO-300 series – Form X-30019

Operation Manual & Service Maintenance Instructions Model GO-300

(ii) *Current service Information:*

Service Bulletins

(iii) *Illustrated Parts Catalogue:*

Cessna 172/175 (1956-1962) Parts Catalog – Publication P-257-12

Cessna R172 (1977-1981) Parts Catalog – Publication P698-12

Cessna 172RG (1980-1985) Parts Catalog – Publication P693-12

Service Parts Manual for Continental GO-300 series – Form X-30020

(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>

## 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 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)
		(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter
		N/A – Air cooled CAR §3.655(b)(1)(iii) N/A – Fixed-Pitch N/A – less than 250 hp CAR §3.338 N/A – Fixed undercarriage CAR §3.681
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.

## Attachments

The following documents form attachments to this report:

- Photographs first of type example Cessna 175 ZK-BCR
- Three-view drawings Cessna Models 175, R172K and 172RG
- Copy of FAA Type Certificate Data Sheet number 3A17

## Sign off

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David Gill  
Team Leader Airworthiness

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Checked – Kavita Vanmari  
Airworthiness Engineer

## Appendix 1

### List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
175	B Ruffell	96/21B/12	12 January 1996
175A/B/C	Textron Aviation Inc	18/21B/11	19 September 2018
172RG (1982-85)	Textron Aviation Inc	18/21B/11	19 September 2018