

---

# **Type Acceptance Report**

**TAR 3/21B/25**

**HELIO H-250**



## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>1. INTRODUCTION</b>	<b>1</b>
<b>2. FOREIGN TYPE CERTIFICATE DETAILS</b>	<b>1</b>
<b>3. TYPE ACCEPTANCE CERTIFICATE</b>	<b>2</b>
<b>4. TYPE DATA</b>	<b>2</b>
<b>5. ADDITIONAL NEW ZEALAND REQUIREMENTS</b>	<b>3</b>
<b>ATTACHMENTS</b>	<b>4</b>



## Executive Summary

New Zealand Type Acceptance has been granted to the Helio Courier Series based on validation of FAA Type Certificate No.1A8. There are no special requirements for import.

Applicability is currently limited to the Model H-250, which is 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 approved under this type certificate can become type accepted after supply of the applicable documents, in accordance with the provisions of §21.43(b).

## 1. Introduction

This report details the basis on which Type Acceptance Certificate No.3/21B/25 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.

## 2. Foreign Type Certificate Details

Type Certificate:	1A8
Issued by:	Federal Aviation Administration
Manufacturer:	Helio Aircraft Corporation
Current TC Holder:	Alliance Aircraft Group LLC (d.b.a Helio Enterprises Inc.)
Model(s):	<b>H-250</b>
Engine:	Lycoming O-540-A1A5
Propeller:	Hartzell HC-92WK-1D/W8847
MCTOW	3400 lb.
Noise Category:	Not Applicable

The certification basis of the Helio H-250 is Part 3 of the Civil Air Regulations effective November 1, 1949, as amended to May 16, 1953. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A,

as CAR 3 is the predecessor to FAR Part 23, which is the basic standard for Normal Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no special conditions have been prescribed by the Director under §21.23.

### 3. Type Acceptance Certificate

The application for New Zealand type acceptance was from the importer Mr T V Collins, dated 14 January 2003. The first-of-type example was serial number 2503, registered as ZK-TCE. The Helio is an all-metal high-wing utility aircraft with STOL characteristics.

Type Acceptance Certificate No. 3/21B/25 was granted on 3 November 2004 to the Helio Model H-250 based on validation of FAA Type Certificate No. 1A8. There are no special requirements for import into New Zealand.

The original Helio production model was the H-391, which was fitted with the GO-435-C2 engine. Although it was subsequently developed into a range of models, all piston-powered versions of the Helio are essentially similar except for the firewall forward. A number were produced as military aircraft. The H-250 is basically the H-391 with the 250hp O-540 engine and increased gross weight. It was known as the Courier II and 41 were built.

The only FAA Airworthiness Directive applicable to the H-250, 82-16-08, requires on or before August 1, 1984, the installation of wing carry-thru assembly reinforcement straps as detailed in STC 1590CE (for P/N 391-030-401) or STC 1728CE (for P/N 295-030-401). This modification was developed by Mr Clarence H. Brent, a former DER for Helio, but is no longer available. (The CAA established the STC is now owned by Mr Steve Murray, of Aero Pacific, Palomar, who stated however that he was unable to get the STC data released by the FAA.) Based on comparison with a copy of the STC and substantiation obtained from a confidential source a local modification was approved by the CAA as 4/MOD/101.

### 4. Type Data

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents:

(1) Type certificate:

FAA TCDS 1A8 at Revision 33 dated September 18, 1997

(2) Airworthiness design requirements: Already held by the CAA.

(3) Certification compliance listing:

Helio Aircraft Corporation Report H-250-S-0 – Model H-250 Basic Data  
Helio Aircraft Corp. Report H-250-W-3 – H-250 Equipment List Substantiation

The following additional reports are available if required:

H-250 Tailcone Assembly Ground Loads Determination and Static Tests  
H-250 Loads Determination & Static Tests of Tailcone, Vertical & Horizontal Tail  
H-250 Wing Loads Determination and Static Tests

H-250 Helio Drawing List	H-250 Landing Gear Absorption Test
H250 Courier Flight Test Report	H-250 Main Landing Gear Strut Static Test
H-250 Fuselage Analysis	H-250 Engine Mount Analysis

(4) Flight manual: FAA-Approved Airplane Flight Manual – Helio Model H-250  
CAA Accepted as AIR 2873

(5) Illustrated Parts Catalogue: Original Issue 250 Parts Catalog

(6) Maintenance manual and service data for aircraft, engine and propeller:

Operation and Maintenance Manual – Helio Courier II Model H-250

Service Bulletin 36/Helio Service Notes 22A, 32, 33, 34, 35

(7) Agreement from manufacturer to supply updates of data in (4), (5) and (6):

No amendments to the manuals have been issued. The only required document under the type certificate is the Flight Manual. the currency of which is specified on the TCDS (November 6, 1964).

(8) Additional information:

STC Number SA1728CE – Helio H-250, H-295, HT-295, H-391, H-391B, H-395 and H-395A – Modification of the Helio P/N 295-030-401 carry-through assembly to remove the pads welded to the main lower tube and install full length straps per Clarence H. Brent Drawing No.B-401-1 (4 sheets) and Installation Instructions (13 pages) stamped “FAA Approved” with a date of March 17, 1982 or later.

Report B401-S-1 Substantiation of Clarence H. Brent Part No. B-401-1

## 5. Additional New Zealand Requirements

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 is a prerequisite for the grant of a type acceptance 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 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 Rules Part 91

#### Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training	Air Associates P/N M4450-AC-FC 3-point Safety Harness Fitted as Standard (See Rpt. H-250-W-3 and IPC Figure 5-4)

91.507	Pax Information Signs - Smoking, safety belts fastened		Not Applicable – Less than ten passenger seats	
91.509 Min. VFR	(1) ASI	CAR §3.655(a)(1) – Garwin P/N 22-697-02 Fitted as Std *	(7) Oil Pressure	CAR §3.655(b)(1)(ii) – Fitted as Standard in Cluster Group *
	(2) Machmeter	N/A – No mach number limitations	(8) Coolant Temp	N/A – Air cooled engine
	(3) Altimeter	CAR §3.655(a)(2) – Garwin 22-977-02 Fitted as Standard *	(9) Oil Temperature	CAR §3.655(b)(1)(iii) – Fitted as Standard in Cluster Group *
	(4) Magnetic Compass	CAR §3.655(a)(3) – Airpath C-2400 Fitted as Standard *	(10) Manifold Pressure	CAR §3.655(b)(2)(iii) – Garwin P/N 22-260-038 Fitted as Std *
	(5) Fuel Contents	CAR §3.655(b)(1)(i) – Fitted as Standard in Cluster Group *	(11) Cylinder Head Temp.	CAR §3.655(b)(2)(i) – Fitted as Standard in Cluster Group *
	(6) Engine RPM	CAR §3.655(b)(1)(v) – P/N AC 1536555 Fitted as Std *	(12) Flap Position	External markings on flap track
			(13) U/c Position	N/A – Fixed undercarriage
			(14) Ammeter/Voltmeter	CAR §3.687 – Cluster Group *
	* See Report H-250-W-3 Helio Model H-250 Equipment List			
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 Emrgcy Eqpmt.	(a) More Than 10 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8		Not Applicable – Less than 10 passenger seats	
	(b) More than 20 pax - Axe readily acceptable to crew		Not Applicable – Less than 20 passenger seats	
	(c) More than 61 pax - Portable Megaphones per Table 9		Not Applicable – Less than 61 passenger seats	
91.529	ELT - TSO C91a after 1/4/97 (or replacement)		<i>To be determined on an individual aircraft basis</i>	
91.531	Oxygen Indicators - Volume/Pressure/Delivery		Not fitted as standard	
91.533	Oxygen for Non-Pressurised Aircraft		<i>Operational requirement – Compliance as applicable</i>	
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 – Reciprocating-engine 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 Rules Part 135

### Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness flight-crew seats	<i>Operational requirement – Compliance as applicable</i>
135.357	Additional Instruments (Powerplant and Propeller)	<i>Operational requirement – Compliance as applicable</i>
135.359	Night Flight	Landing light, Pax compartment
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>Operational requirement – Compliance as applicable</i>
135.367	Cockpit Voice Recorder	Not Applicable – Only required for 2-crew large helicopters
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

## Attachments

The following documents form attachments to this report:

- Photographs first-of-type example Helio H-250 s/n 2503 ZK-TCE
- Three-view drawing Helio Model H-250 Courier II
- Copy of FAA Type Certificate Data Sheet Number 1A8

## Sign off

.....  
David Gill  
Team Leader Airworthiness

.....  
Checked – AWE3  
Date: 3 November 2004