
Type Acceptance Report

TAR 11/21B/16

IAE V2500 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the International Aero Engines V2500 Series based on validation of FAA Type Certificates number E31NE and E40NE. 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 installation on a New Zealand-registered aircraft. Additional variants or serial numbers approved under the foreign type certificates can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.11/21B/16 was granted 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 in New Zealand; and
- (b) Identify any special conditions for import applicable to any model covered by the Type Acceptance Certificate.

The report also notes the status of all models included under the foreign type certificate which have been granted type acceptance in New Zealand. Models covered by the type acceptance certificate issued under Part 21B are listed in Section 2 of this report.

2. ICAO Type Certificate Details

Manufacturer: IAE International Aero Engines AG

Type Certificates: **E31NE** and **E40NE**

Issued by: Federal Aviation Administration (FAA)

Models: See over for table

Max Thrust: See over for table

Application: See over for table

Environmental Standards: FAR 34 and ICAO Annex 16

Models:

TC	Model	Take-off Thrust (lb)	Application
E31NE	V2500-A1	24,800	A320-231
E40NE	V2530-A5	29,900	A321-131, -232
	V2527-A5	24,800	A320-232
	V2528-D5	28,000	MD-90-30
	V2525-D5	25,000	MD-90-30
	V2527E-A5	24,800	A320-233
	V2522-A5	23,040	A319-131
	V2524-A5	24,480	A319-132
	V2533-A5	31,600	A321-231
	V2527M-A5	24,800	A319-133

3. Type Acceptance Details

The initial application was from Airbus for the V2527-A5 variant used on the A320-232. This was completed on 1 September 2003 as part of type acceptance of the A320-232 under CAA work request 3/21B/18. When an application was subsequently made to type accept the remaining Airbus single aisle models, IAE elected to make a separate application for the engines. The application for New Zealand type acceptance dated 3 December 2010 was from the type certificate holder, IAE International Aero Engines AG, submitted via the FAA as per the bilateral agreement between the FAA and CAANZ.

Type Acceptance Certificate No. 11/21B/16 was granted on 4 September 2012 to the IAE V2500 engine series based on validation of FAA Type Certificates E31NE and E40NE. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The V2500 engine series are twin-shaft high-bypass turbofan engines, with a single stage forward fan, three or four stage low pressure compressor, ten-stage high-pressure compressor, annular combustor, two stage high-pressure turbine and five-stage low-pressure turbine.

The V2500 engine series is the sole product of the company, formed in 1983 as a partnership between Rolls-Royce of England, Pratt & Whitney of the USA, MTU Aero Engines of Germany, and the Japanese Aero Engine Corp. Rolls-Royce sold its equity stake to Pratt & Whitney in 2012, but remains a technical partner.

The engine was designed and optimised for the A320 family, and was selected as the second engine option. It entered service in 1989 and now powers approximately half of the A320 series fleet. The variant optimised for the MD-95 entered service in 1995. The engine has recently been selected to power the Embraer KC-390 aircraft project.

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) ICAO Type certificate:

FAA Type Certificate E31NE issued June 24, 1988

FAA Type Certificate Data Sheet E31NE Rev 9* dated March 22, 1995

FAA Type Certificate E40NE issued November 24, 1992, amended May 3, 1999

FAA Type Certificate E40NE Data Sheet Rev 9* dated June 22, 1999

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the various models is:

V2500-A1 model - FAR 33, effective February 1, 1965 as amended by 33-1 through 33-10 inclusive.

V2530-A5, V2527-A5, V2527E-A5, V2528-D5, V2525-D5 models - FAR 33, effective February 1, 1965 as amended by 33-1 through 33-14 inclusive.

V2522-A5, V2524-A5, V2527M-A5, V2533-A5 - FAR 33, effective February 1, 1965 as amended by 33-1 through 33-14 inclusive, and FAR 33.28, amendment 33-15.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as FAR 33 is the basic certification standard for aircraft engines 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) *Airworthiness Limitations:*

Chapter 5, Time Limit Section of the V2500 Turbofan Engine manual (TCDS Note 12)

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

All Models meet the fuel venting emissions requirements, and the smoke and gaseous emissions requirements, of FAR Part 34. Engines on TC E40NE also meet the carbon monoxide and nitrogen oxide requirements of ICAO Standards.

(ii) *Compliance Listing:*

V2500 Smoke & Gaseous Emissions Measurement Test – IAE Report

V2500-A5 & D5 Smoke & Gaseous Emissions Measurement Test – IAE Report

V2533-A5 Smoke & Gaseous Emissions Measurement Test – IAE Report

(4) Certification Compliance Listing:

- V2500 Summary of Compliance – IAE Report
- V2500-A5 Summary of Compliance – IAE Report
- V2500-D5 Summary of Compliance – IAE Report
- V2533-A5 Summary of Compliance – IAE Report

(5) Operating Data for Engine:

(i) *Maintenance Manual:*

- Engine Manual *
- Component Maintenance Manuals *
- Overhaul Process and Consumables Manual *
- Standard Practices and Processes Manual *
- Time Limits Manual *

(ii) *Current service Information:*

- Service Bulletins *

(iii) *Illustrated Parts Catalogue:*

- Illustrated Parts Catalog *

* All contained within Interactive Electronic Technical Manual (IETM)

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

Website subscription to V2500 publications provided at www.iaeworld.com

(7) Other information:

V2500-A1 and –A5 series - Installation & Operating Manual

Attachments

The following documents form attachments to this report:

- V2500 Sectional drawing
- Copy of FAA Type Certificate Data Sheets E31NE and E40NE

Sign off

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Peter Gill
Airworthiness Engineer

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Checked – Greg Baum
Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
V2500-A1	IAE International Aero Engines	11/21B/16	4 Sept 2012
V2530-A5	“ “ “ “	“	“
V2527-A5	Airbus	3/21B/18	1 Sept 2003
V2528-D5	IAE International Aero Engines	11/21B/16	4 Sept 2012
V2525-D5	“ “ “ “	“	“
V2527E-A5	“ “ “ “	“	“
V2522-A5	“ “ “ “	“	“
V2524-A5	“ “ “ “	“	“
V2533-A5	“ “ “ “	“	“
V2527M-A5	“ “ “ “	“	“