
Type Acceptance Report

TAR 98/21B/05 – Revision 1

PZL M18B Dromader

RESTRICTED CATEGORY

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Executive Summary

New Zealand Type Acceptance has been granted to the PZL M18 Series based on validation of Type Certificate number EASA.A.056. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Section 2, which are now eligible for the issue of an Airworthiness Certificate in the Restricted 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. 98/21B/05 was granted in the Restricted 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 notes the status of all models included under the State-of-Design type certificate which have been granted type acceptance in New Zealand, which are listed in Section 2. The history of the PZL M18 Series type acceptance in New Zealand under type certificate EASA.A.056 is listed in Appendix 1.

2. Aircraft Certification Details

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

Manufacturer: Wytwórnia Sprzetu Komunikacyjnego "PZL-Mielec"
Type Certificate: EASA.A.056
Issued by: European Aviation Safety Agency
TC Holder: Polskie Zaklady Lotnicze Sp. Z o.o.

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

(i) **Model:** PZL M18B "Dromader"
MCTOW: 4200 kg (9260 lb.) Normal Category
5300 kg (11684 lb.) Restricted Category
Max. No. of Seats: 2
Noise Standard: FAR Part 36
Engine: PZL-Kalisz ASz-62IR-M18
Type Certificate: EASA.E.140
Issued by: European Aviation Safety Agency
Propeller: PZL-Warszawa AW-2-30
Type Certificate: PL DB-122
Issued by: Polish Civil Aircraft Inspection Board

3. Application Details and Background Information

The application for New Zealand type acceptance of the PZL M18B was from the importer, Patchett Ag-Air Limited, dated 11 September 1997. The first-of-type example was serial number IZ026-29 registered ZK-RMC. The PZL M18 Series is a single radial-piston-engine low-wing all-metal agricultural aircraft with a fixed tailwheel undercarriage and the hopper located forward of the pilot.

Type Acceptance Certificate No.98/05 was granted on 22 October 1997 to the PZL M18B based on validation of Polish Type Certificate number BB-120, and includes the PZL-Kalisz ASz-62IR-M18 engine based on Polish Type Certificate number CB-116, and the PZL-Warszawa AW-2-30 propeller based on Polish Type Certificate number DB-122. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import.

The M18B model is an improved development of the M18/A “Dromader” with an enlarged and redesigned elevator, revised elevator control system spring and new aileron-rudder spring connection, and landing flap travel increased to 30°. The M18A differs from the original M18 only in having an increased capacity fuel system and the addition of a mechanic’s cabin behind the pilot. A dual control training version is available as the M18AS, which has a second cockpit ahead of the standard pilot’s position.

This report was raised to Revision 1 to update the format and note the change of State-of-Design type certificate jurisdiction to EASA.

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:

EASA Type Certificate Number EASA.A.056

Type Certificate Data Sheet no. EASA.A.056 at Issue 4 dated 2 September 2020
– Model M18B approved 27 January 1994

Type Certificate Data Sheet number EASA.E.140 at Issue 5 dated 11 May 2015
– Model ASz-62IR-M18 approved 15 February 1978

Polish TC Nr.DB-122 “PZL-Warszawa” AW-2 issued 2.04.79

Polish TCDS No.DB-122 AW-2 Issue 3 dated 28.06.1991

Supersedes:

Swiadcstwo Typu Sprzetu Lotniczego Nr BB-120 – issued by Polish
People’s Republic – Civil Aircraft Inspection Board

Polish TC Nr.CB-116 PZL-Kalisz ASz-62IR Issued 15.II.78

Polish TCDS No.CB-116-5 ASz-61IR-16/M18 dated July 15, 1992

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the PZL M18B in the Normal Category is FAR Part 23 at Amendment 23-16. For the Restricted Category (overload) the provisions of Civil Aeronautics Manual 8, Second Edition, were applied. (Under the FAA type certificate A47EU a series of FAR 23 paragraphs were excluded because they were considered inappropriate for the Restricted Category, Agricultural and Forest/Wildlife Conservation (Fire Fighting) Special Purposes.)

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as FAR 23 is the basic standard for Normal Category Airplanes called up under Appendix C. The exclusions There are no non-compliances and no special conditions have been prescribed by the Director under 21.23.

The certification basis of the ASz-62IR-M18 is FAR 33, effective October 31, 1974, including Amendments 33-1 to 33-6. This is the basic standard for aircraft engines called up under Part 21 Appendix C.

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

Nil

(iv) *Airworthiness Limitations:*

See ARM GICA-Approved Section III – Service Lives (Airframe 6000 hours)

PZL "Warszawa-Okecie" Service Bulletin No. 1395012 – Mandatory – Propeller Life Limit and Time Between Overhauls of AW-2 & AW-2-30 Propeller

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The PZL M18 Series has been exempt from noise certification on the basis that it was specifically designed for firefighting and agricultural operations.

(4) Certification Compliance Listing:

Compliance Checklist – FAR 23 – PZL M18 Dromader – January 1981

Compliance Checklist – FAR 23 Amendments 23-1 through 23-16 – PZL M18A Dromader – November 1986

Compliance Checklist – FAR 23 Amendments 23-1 through 23-16 – PZL M18B Dromader – January 1994

FAR 23 Non-Compliance List – M18 – Manufacturer's Explanations – January 1981 – §23.613 and §23.615 Referencing US handbooks for design values. Polish standards used in lieu. Material equivalents listed in Repair Manual.

Compliance Table FAR Part 35 – AW-2-30 used with R9SM2 Governor Type supplied by PZL-Wroclaw – Fitted to ASz-61-IR engines in M-18 & AN-2

(5) Flight Manual: FAA-Approved Flight Manual for the PZL M18B "Dromader" equipped with ASz-61IR-M18 Engine – CAA Accepted as AIR 2595

PZL also supplied a copy of the Polish Flight Manual dated Dec.20, 1995 – GICA Approved March 26, 1997. The FAA manual was adopted because it contained performance information for the aircraft at overload weights, whereas this was contained in a separate supplement in the Polish manual. PZL Mielec advised the manuals were essentially identical in content except for the separation in the FAA manual between approved and unapproved sections.

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

(i) *Maintenance Manual:*

Airplane Description and Service Manual PZL M18 Dromader – Dec 1979

Aircraft Repair Manual – M18, M18A, M18AS, M18B – Edition 3 May 1981

Maintenance Instructions and Schedule of Periodic Inspections for ASz-62IR aircraft engine 16th series – Edition 1, March 1975

Doc. WT-62.01.01K – ASz-62IR-16/M18 Installation Manual

Doc. WT-62.02.01K – ASz-62IR-16/M18 Operation Instructions

Doc. WT-62.03.01K – ASz-62IR-16/M18 Maintenance & Inspection Instructions

Doc. WT-62.04.01K – ASz-62IR-16/M18 Service Instructions

(All 4 in one volume)

Propeller AW-2-30 Technical Description and Service Manual Doc.No.001

The Polish version of this Manual has been approved by the MINISTRY of TRANSPORTATION - Civil Aircraft Inspection Board on the 02.04.1979

(ii) *Current service Information:*

List of Bulletins Issued for the M18 Airplane – ARM Page 53 dated 28.02.97

(iii) *Illustrated Parts Catalogue:*

PZL M18 Parts and Assemblies Catalog (3 Volumes)

ASz-62IR Aircraft Engine Catalogue of Parts and Assemblies

Propeller AW-2/-30 Catalogue of Spare Parts

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

CAA 2171 form from WSK PZL-Mielec Commercial Director dated 97.09.01

(8) Other information:

List of Type Certificates issued for “Dromader” aircraft models

Set of sample delivery documents for ASz-62IR-M18 engines

The aircraft is delivered with a comprehensive set of documentation, including:

- A full set of operating and maintenance manuals for the aircraft, engine and propeller;
- Export Certificates of Airworthiness for the aircraft, engine and propeller;
- Engine Acceptance Certificate;
- Aircraft Equipment airworthiness certificate – Propeller;
- Fitness Certificates of Aviation Equipment - Magneto (2x), Carburettor, Constant Speed Unit, Fuel Pump, Starter, Dynamo, Oil Pump, Filter;
- Specification of Operation Equipment;
- Production Check Flight schedule;
- Airplane Depreservation & Assembly Instructions/as unpacked from the carton;
- Ground Equipment and Spare Parts Illustrated Specification;
- PZL M18B “Dromader” Weighing Sheet;
- PZL M18 “Dromader” Aircraft Levelling;

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	Means of opening the exit were clearly marked
B.2	Crew Protection Requirements – CAM 8 Appendix. B #.35	Certification against FAR 23.561(b) at Amendment 23-36 (See fax from PZL-Mielec ref. LTO/R/573/97)

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	Superseded by CAR §137.255
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	See AFM Fig.7.3 Item 3 Not Applicable – no Mach number limitations See AFM Fig.7.3 Item 8 See AFM Fig.7.4 Item 6 See AFM Fig.7.2 Item 2 See AFM Fig.7.2 Item 9 See AFM Fig.7.2 Item 6
		(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 engine See AFM Fig.7.2 Item 6 See AFM Fig.7.2 Item 8 See AFM Fig.7.2 Item 7 Marked on flaps – readily visible from the cockpit. N/A – Fixed undercarriage See AFM Fig.7.2 Item 11
91.511	Night VFR Instruments and Equipment	Operational Requirement – Compliance as applicable
91.513	VFR Communication Equipment	Operational Requirement – Compliance as applicable
91.517	IFR Instruments and Equipment	Operational Requirement – Compliance as applicable
91.519	IFR Communication and Navigation Equipment	Operational Requirement – Compliance as applicable
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	Operational Requirement – Compliance as applicable
91.531	Oxygen Indicators – Volume/Pressure/Delivery	Operational Requirement – Compliance as applicable
91.533	Oxygen for non-Pressurised Aircraft:	Operational Requirement – Compliance as applicable
91.541	SSR Transponder and Altitude Reporting Equipment	Operational Requirement – Compliance as applicable
91.543	Altitude Alerting Device – Turbojet or Turbofan	Not Applicable – Not turbojet or turbofan powered
91.545	Assigned Altitude Indicator	Operational Requirement – Compliance as applicable
A.15	ELT Installation Requirements	To be determined on an individual aircraft basis

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

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
137.255	Seating and Restraints – Shoulder harness for each crew seat	Shoulder harness with inertial reel fitted as standard. (See AFM Section 7.25 “Pilot Compartment” and IPC Fig
137.257	Additional Instruments – Slip indicator required	To be determined on an individual aircraft basis
137.259	Additional equipment	See Appendix D compliance statements
	Appendix B – Overload Weight Determination	Original Load factor = +3.4g in normal category (+2.8 in restricted category) Per Fig.2 of Appendix B maximum recommended % weight increase is 25% MCTOW = 4200 kg ⇒ Recommended MTOW per Part 137 is 5325 kg This is similar to that permitted under BB-120 in the Restricted Category (5300 kg) or by the FAA (Under FAA STC No.SA01276AT) Restricted Category 11,700 lb (5307 kg)

Appendix D - Instruments and Equipment Airworthiness Design Standards		
D.1	Seating and Restraints - Ultimate fwd inertia load of 12g	The aircraft has been certificated against FAR 23.561(b) and 23.562 at Amendment 23-26, plus Australian requirements which specify a forward load of 25g. (See PZL Report No. M18/LTO-2/63/95 - Strength of the Seat - Safety Belts Group)
D.3	Hoppers and spray tanks - 12g fwd/1.5 rear/1.0 side	Not Applicable - Hopper mounted forward of the pilot
D.4	Hopper upper level contents - Indication, density	Hopper has viewing port visible in the cockpit
D.5	Jettison gear - Simple to operate, single action required - Capability demonstrated by flight test/AFM	No factory equipment has been shown to comply. Any jettison gear fitted to the aircraft for operation under Part 137 will need to be individually tested and approved.
D.6	Markings/Placards	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.

Attachments

The following documents form attachments to this report:

Copy of Type Certificate Data Sheet Number EASA.A.056

Sign off



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David Gill
Team Leader Aircraft Inspection



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Checked - Rens Molenaar
Certification Engineer

Appendix 1

List of Type Accepted Variants:

Model:	Applicant:	CAA Work Request:	Date Granted:
M18B	Patchett Ag-Air Limited	98/21B/5	22 October 1997

Appendix 2

3-view Drawing PZL M18B Dromader

