European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

EASA.A.443

ZLIN Z 37 T SERIES

Type Certificate Holder:

ZLIN AIRCRAFT A.S.
Letiště 1578
765 81 Otrokovice
CZECH REPUBLIC

For Models: Z 37T, Z 137 T

Issue 3: **23 JULY 2010**

CONTENTS

SECTION A: Z 37 T

AI. General

1.	a) Type:	Z 37 T
	b) Model:	---
2.	Airworthiness category:	Restricted (see Note 2)
3.	Type Certificate Holder:	ZLIN AIRCRAFT A.S. Letiště 1578 765 81 Otrokovice CZECH REPUBLIC
4.	Manufacturer:	Moravan n.p. Letiště 1578 765 81 Otrokovice CZECHOSLOVAKIA S/N: 001 – 024 Moravan k.p. Letiště 1578 765 81 Otrokovice CZECHOSLOVAKIA S/N: 025 – 030
5.	Certification Application Date:	---
6.	CAA Cz Type Certificate Date:	December 29, 1985
7.	EASA Type Certificate Date:	27-Mar-2007

The EASA Type Certificate replaces the CAA Cz Type Certificate No. 84 – 01.

AII. Certification Basis

1.	Reference Date for determining the applicable requirements:	---
2.	(Reserved)	
3.	(Reserved)	
4.	Airworthiness Requirements:	British Civil Airworthiness Requirements, Section K, Light Aeroplanes, Issue 6, April 1974
5.	Requirements elected to comply:	None
6.	EASA Special Conditions:	None
7.	EASA Exceptions:	None

8. EASA Equivalent Safety Findings: J2-1, 9.6 – An equivalent safety is provided by installing the volt-amperemeter.

J3-3, 6.1 – It is admitted with regard to the electrical system simplicity. The acceptable safety is secured by the master switch.

K2-8, 6.2.1 – Control forces do not reverse. Angle of sideslip for which rate of control forces increases unsteadily is not appropriate to considered aircraft operation and will not be reached during flight usually.

K2-10, 4.1 – negative static lateral stability does not cause lack of manoeuvrability, negative static lateral stability does not occur in operation.

K2-10, 4.2 – rudder control force does not reverse at sideslips at all events.

K2-10, 5.1 – Undamped not diverging oscillation does not cause an excessive structure stress or unreasonable fatigue of the crew and does not require abnormal pilot's skills or effort in the course of aircraft control.

The max. rate of descent with engine idling is limited to 220 km/h IAS

K2-10, 6 – It is admitted with regard to the fact that it is a transient effect only, which will disappear immediately after engine power or speed change. The CAUTION is provided in the Flight Manual.

K3-2, 2.10.1 – It is admitted with regard to the fact that the strength of hinges is not adversely affected.

K4-8, 2.1.14 b) (iii) – The aircraft is equipped with fixed landing gear and no confusion between wing flaps and landing gear control knobs is possible.

K5-2, 4.2.2 a) b) – The tank has been tested at 1.3 times the maximum amplitude and frequency of vibration, measured during different flight phases on the spar at the point of fuel tank supporting structure. It is admitted with regard to operation experiences with analogical fuel tanks on another aircraft.

K5-8 – The fire protection equipment is installed in the fire zone and its efficiency was proved by the analysis.

K6-1, 2.10.2 – The aerodynamic correction in dependence on the speed is in any case in safe margin.

K6-1, 2.11.3 – The position error of the Pitot-static system is in safe margin and the static system error does not exceed approved altitude limits. It is admitted with regard to experiences from operation of analogical aircraft types.

9. EASA Environmental Standards: ICAO Annex 16, Volume I, Chapter 10

Z 37 T

AIII. Technical Characteristics and Operational Limitations

1. Type Design Definition: The specification list of aircraft AGRO TURBO Z 37T, No. S-T 37.0.0000-0000

2. Description: The Z 37 T aircraft is a single-seat, single-engine, turbo-propeller, low-wing monoplane of a mixed construction. It is provided with agricultural equipment and towing gear for gliders towing.

3. Equipment: Approved equipment list is stated in Flight Manual Z-37 T, Doc. No. DO-Z 37T-1011.1, Chapter 6

4. Dimensions:
   Wing Span: 13.630 m
   Length: 10.460 m
   Height: 3.505 m
   Wing Area: 26.690 m^2

5. Engine:

   5.1 Model: Walter M 601 Z (8)

   5.2 Type Certificate: EASA approved (CAA Cz TC No. 75 – 03) (see Note 3)

   5.3 Limitations:

   Max. Take-off Power (max. 5 min.):
   - Maximum Power 360 kW
   - Maximum generator speed 99 %
   - Maximum propeller speed 1 800 1/min
   - Maximum ITT (inter-turbine temperature) 710°C

   Maximum Continuous Power:
   - Maximum Power rating 245 kW
   - Maximum generator speed 94 %
   - Maximum propeller speed 1 800 1/min
   - Maximum ITT 650°C

   Work Power rating:
   - Maximum work Power rating 180 kW
   - Maximum generator speed 75 – 95 %
   - Maximum propeller speed 1 800 1/min
   - Maximum ITT 690°C

6. Load factors:
   Normal category + 3.7 g; - 1.48 g
   Aerial work category + 3.2 g; - 1.28 g

7. Propeller:

   7.1 Model: AVIA V 508 Z (7)

7.2 Type Certificate: EASA approved (CAA Cz TC No. 75 – 02) (see Note 4)

7.3 Number of blades: 3

7.4 Diameter: 2 500 mm

7.5 Sense of Rotation: Clockwise in flight direction

8. Fluids:

8.1 Fuel: PL-6 according to PND 25-005-76
T-1 according to ST SEV 5024-85 or GOST 10227-86
TS-1 according to ST SEV 5024-85 or GOST 10227-86 or ČSN 656 520
JET A-1 according to ASTMD 1655-89 or DERD 2494
RT according to ST SEV 5024-85 or GOST 10227-86 or ČSN 656 520

8.2 Oil: Synthetic B3V
AERO SHELL TURBINE OIL 500
AERO SHELL TURBINE OIL 550

8.3 Coolant: None

9. Fluid capacities:

9.1 Fuel:

Total:	350 litres (2 x 175 litres in main tanks)
Usable:	340 litres for normal operation
Auxilliary Fuel:	4 x 125 litres in auxiliary tanks (for fuel transport only)
Critical (signalled) fuel quantity in tank:	25 litres (+10, -4) (for normal and aerial work operation)

9.2 Oil: Minimum 5.5 litres – Maximum 11 litres

9.3 Coolant system capacity: None

10. Air Speeds:

Never Exceed Speed Limit	v_{NE}	285 km/h IAS
Normal Operating Speed Limit	v_{NO}	252 km/h IAS
Design Manoeuvring Speed Limit	v_A	187 km/h IAS
Maximum Flaps Extended Speed Limit	v_{FE}	162 km/h IAS
Maximum Speed for agricultural operations		190 km/h IAS
Maximum Speed with agricultural equipment		230 km/h IAS

11. Maximum Operating Altitude: 5 500 m

12. All-weather Operations Capability: The aircraft is approved for VFR Day flights

13. Maximum Weights:

Maximum Take-off weight:		
	Normal operation	2 260 kg
	Aerial works	2 525 kg
Maximum landing weight:		2 400 kg *Z 37 T*
Maximum chemicals weight:		900 kg
Maximum baggage weight (Normal operation only):		50 kg

14. Centre of Gravity Range: 19 % - 33 % MAC
M.A.C. is 2 058 mm; 0 % M.A.C. is 682 mm aft reference datum

15. Datum: Determined by system plane of first fuselage bulkhead, from it are measured, for purpose of assignation of Gravity Centre, all horizontal length. (lateral dimensions)

16. Control surface deflections:

Elevator deflection	up	28° + 2° - 0°
	down	20° + 2° - 0°
Rudder deflection	left and right	26° + 2° - 1°
Ailerons deflection	up	26° ± 1°
	down	18°30´ ± 1°
Wing flaps, inner	retracted	8°30´ + 0° - 1°
	take-off	18°30´ + 0° - 1°
	landing	43°30´ + 0° - 2°
Wing flaps, outer	retracted	5°
	take-off	15°
	landing	40°

17. Levelling Means: Levelling points on left and right side of airplane fuselage to be levelled. Measurement plane to be min. 1 050 mm below.

18. Minimum Flight Crew: 1 (Pilot)

19. Maximum Passenger Seating Capacity: 2 including crew (for Normal category only)

20. (Reserved)

21. Baggage/Cargo Compartments: Max. 50 kg in baggage compartment in the cabin of the mechanic, in Normal category only.

22. Wheels and Tyres: Wheel of main landing gear K 40-1100.00 with tyre BARUM or MITAS 556 x 153 – 10;

Wheel of rear landing gear K 41-1100.00 with tyre BARUM or MITAS 290 x 110 – 4.

AIV. Operating and Service Instructions

1. Flight Manual:
   - In Czech language: Letová příručka Z 37 T, date of issue 1985 *Z 37 T*
     Doc. No. DO-Z37T-1011.1
     - from 1st Srs.(up to S/N 0024 incl.)
     Letová příručka Z 37 T, date of issue 1986
     - from 3rd Srs. (from S/N 0025 incl.)

2. Technical Manual:
   - In Czech language: Technický popis Z 37 T, date of issue 1986
     Doc. No. DO-Z37T-1021.1
     - from 1st Srs. (up to S/N 0024 incl.)
     Technický popis Z 37 T, date of issue 1986
     - from 3rd Srs. (from S/N 0025 incl.)

3. Repair Manual:
   - In Czech language: Posezónní prohlídka letounů Z 37 T, Z 137T, date of issue 1990

4. Manual for Operation:
   - In Czech language: Návod pro obsluhu a údržbu nakládacího násypníkuk letounu Z 37 T, date of issue 1986
     Doc. No. DO-Z37T-1031.1
     Příručka pro obsluhu a údržbu letounu Z 37 T, date of issue 1988
     - from 3rd Srs. (from S/N 0025 incl.)
   - In English language: Handbook for the Z 37 T and Z 137 T Aircraft with filling chemicals, date of issue 1991

5. Spare Parts Catalogue:
   - In Czech language: Katalog náhradních dílů letounu Z 37 T, date of issue 1987
     - from 1st Srs.
     Katalog náhradních dílů zemědělského zařízení letounu Z 37 T, date of issue 1988

6. Table of Dimensions, Limits and Clearances:
   - In Czech language: Album rozměrů a vůlí Z 37 T, date of issue 1988

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7. Instruments and aggregates:
   - In Czech language: Přístroje a agregáty Z 37 T, date of issue 1988

AV. Notes

Note 1: The following Z 37 T aircraft have been converted by the manufacturer to the model:

Z 137 T S/N: 025, 026, 027, 028

Note 2: No general restrictions applicable. Any restrictions necessary for a single airplane to be listed in the Certificate of Airworthiness of the affected airplane

Note 3: The EASA type certification standard includes that of CAA Cz TC No. 75-03 based on individual EU member state acceptance or certification of this standard prior to 28 September 2003. Other standards confirming to TC/TCDS standards certificated by individual EU member state prior to 28 September 2003 are also acceptable.

Note 4: The EASA type certification standard includes that of CAA Cz TC No. 75-02 based on individual EU member state acceptance or certification of this standard prior to 28 September 2003. Other standards confirming to TC/TCDS standards certificated by individual EU member state prior to 28 September 2003 are also acceptable.

SECTION B: Z 137 T

BI. General

1. a) Type:	Z 37 T
b) Model:	Z 137 T
2. Airworthiness category:	Restricted (see Note 1)
3. Type Certificate Holder:	ZLIN AIRCRAFT A.S. Letiště 1578 765 81 Otrokovice CZECH REPUBLIC
4. Manufacturer:	Moravan k.p. Letiště 1578 765 81 Otrokovice CZECHOSLOVAKIA S/N: 031 Moravan a.s. Letiště 1578 765 81 Otrokovice CZECHOSLOVAKIA S/N: 032 – 051 MORAVAN – AEROPLANES, a.s. Letiště 1578 765 81 Otrokovice CZECH REPUBLIC S/N: 052, 053
5. Certification Application Date:	---
6. CAA Cz Type Certificate Date:	June 15, 1988
7. EASA Type Certificate Date:	27-Mar-2007 (reissue, EASA)

The EASA Type Certificate replaces the CAA Cz Type Certificate No. 84 – 01.

BII. Certification Basis

1. Reference Date for determining the applicable requirements:	---

2. (Reserved)

3. (Reserved)

4.	Airworthiness Requirements:	British Civil Airworthiness Requirements, Section K, Light Aeroplanes, Issue 6, April 1974
5.	Requirements elected to comply:	None
6.	EASA Special Conditions:	None
7.	EASA Exceptions:	None
8.	EASA Equivalent Safety Findings:	J2-1, 9.6 – An equivalent safety is provided by installing the volt-amperemeter. J3-3, 6.1 – It is admitted with regard to the electrical system simplicity. The acceptable safety is secured by the master switch. K2-8, 6.2.1 – Control forces do not reverse. Angle of sideslip for which rate of control forces increases unsteadily is not appropriate to considered aircraft operation and will not be reached during flight usually. K2-10, 4.1 – negative static lateral stability does not cause lack of manoeuvrability, negative static lateral stability does not occur in operation. K2-10, 4.2 – rudder control force does not reverse at sideslips at all events. K2-10, 5.1 – Undamped not diverging oscillation does not cause an excessive structure stress or unreasonable fatigue of the crew and does not require abnormal pilot's skills or effort in the course of aircraft control. The max. rate of descent with engine idling is limited to 220 km/h IAS K2-10, 6 – It is admitted with regard to the fact that it is a transient effect only, which will disappear immediately after engine power or speed change. The CAUTION is provided in the Flight Manual. K3-2, 2.10.1 – It is admitted with regard to the fact that the strength of hinges is not adversely affected. K4-8, 2.1.14 b) (iii) – The aircraft is equipped with fixed landing gear and no confusion between wing flaps and landing gear control knobs is possible. K5-2, 4.2.2 a) b) – The tank has been tested at 1.3 times the maximum amplitude and frequency of vibration, measured during different flight phases on the spar at the point of fuel tank supporting structure. It is admitted with regard to operation experiences with analogical fuel tanks on another aircraft. K5-8 – The fire protection equipment is installed in the fire

zone and its efficiency was proved by the analysis.

K6-1, 2.10.2 – The aerodynamic correction in dependence on the speed is in any case in safe margin.

K6-1, 2.11.3 – The position error of the Pitot-static system is in safe margin and the static system error does not exceed approved altitude limits. It is admitted with regard to experiences from operation of analogical aircraft types.

9. EASA Environmental Standards: ICAO Annex 16, Volume I, Chapter 10

BIII. Technical Characteristics and Operational Limitations

1. Type Design Definition: The specification list of aircraft AGRO TURBO Z 137T, No. S-T 37.3.0000-0000

2. Description: The Z 137 T aircraft is a single-seat, single-engine, turbo-propeller, low-wing monoplane of a mixed construction. It is provided with agricultural equipment and towing gear for gliders towing.

3. Equipment: Approved equipment list is stated in Flight Manual Z 137 T, Doc. No. DO-Z 137 T-1011.2, Chapter 6

4. Dimensions:

Wing Span:	13.630 m
Length:	10.460 m
Height:	3.505 m
Wing Area:	26.690 m^2

5. Engine:

5.1 Model: Walter M 601 Z (8)

5.2 Type Certificate: EASA approved (CAA Cz TC No. 75 – 03) (see Note 2)

5.3 Limitations:

Maximum Take-off Power (max. 5 min.):

Maximum Power	382 kW
Maximum generator speed	99 %
Maximum propeller speed	1 900 1/min
Maximum ITT (inter-turbine temperature)	710°C

Maximum Continuous Power:

Maximum Power rating	245 kW
Maximum generator speed	94 %
Maximum propeller speed	1 800 1/min
Maximum ITT	650°C

Work Power rating:

Maximum work Power rating	180 kW
Maximum generator speed	75 – 95 %
Maximum propeller speed	1 800 1/min

	Maximum ITT	690°C
6. Load factors:	Normal operation Aerial work operation	+ 3.7 g; -1.48 g + 3.2 g; -1.28 g

Z 137 T

7. Propeller:

7.1 Model: AVIA V 508 Z (7)

7.2 Type Certificate: EASA approved (CAA Cz TC No. 75 – 02) (see Note 3)

7.3 Number of blades: 3

7.4 Diameter: 2 500 mm

7.5 Sense of Rotation: Clockwise in flight direction

8. Fluids:

8.1 Fuel: PL-6 according to PND 25005-76

T-1 according to ST SEV 5024-85 or GOST 10227-86

TS-1 according to ST SEV 5024-85 or GOST 10227-86 or ČSN 656 520

JET A-1 according to ASTMD 1655-89 or DERD 2494

RT according to ST SEV 5024-85 or GOST 10227-86 or ČSN 656 520

8.2 Oil: Synthetic B3V

AERO SHELL TURBINE OIL 500

AERO SHELL TURBINE OIL 550

8.3 Coolant: None

9. Fluid capacities:

9.1 Fuel:

Total:	350 litres (2 x 175 litres in main tanks)	
Usable:	340 litres	for normal operation
Auxilliary Fuel:	4 x 125 litres in auxiliary tanks (for fuel transport only)	
Critical (signalled) fuel quantity in tank:	25 litres (+10, -4) (for normal and aerial work operation)	

9.2 Oil: Minimum 5.5 litres – Maximum 11 litres

9.3 Coolant system capacity: None

10. Air Speeds:	Never Exceed Speed Limit	v_{NE}	285 km/h IAS
	Normal Operating Speed Limit	v_{NO}	252 km/h IAS
	Design Manoeuvring Speed Limit	v_A	187 km/h IAS
	Maximum Flaps Extended Speed Limit	v_{FE}	162 km/h IAS
	Maximum Speed for agricultural operations		190 km/h IAS
	Maximum Speed with agricultural equipment		230 km/h IAS

11. Maximum Operating Altitude: 5 500 m

12. All-weather Operrations Capability: The aircraft is approved for VFR Day flights.

13. Maximum Weights:

Maximum Take-off weight:	
Normal operation	2 260 kg
Aerial works	2 525 kg
Maximum landing weight:	2 400 kg
Maximum chemicals weigh:	900 kg
Maximum baggage weight: (for normal operation only)	50 kg

14. Centre of Gravity Range: 19 % – 33 % M.A.C.
M.A.C. is 2 058 mm; 0 % M.A.C. is 682 mm aft reference datum

15. Datum: Determined by system plane of first fuselage bulkhead, from it are measured, for purpose of assignation of Gravity Centre, all horizontal length. (lateral dimensions)

16. Control surface deflections:

Elevator	up	28° + 2° - 0°
	down	20° + 2° - 0°
Rudder	left or right	26° + 2° - 1°
Ailerons	up	26° ± 1°
	down	18°30´ ± 1°
Wing flaps, inner	basic	8°30´ + 0° - 1°

		take-off	18°30´ + 0° - 1°
		landing	43°30´ + 0° - 2°
	Wing flaps, outer	basic	5°
		take-off	15°
		landing	40°

17. Levelling Means: Levelling points on left and right side of airplane fuselage to be levelled. Measurement plane to be min. 1 050 mm below.

18. Minimum Flight Crew: 1 (Pilot)

19. Maximum Passenger Seating Capacity: 2 including crew (for Normal category only) Z

20. (Reserved)

21. Baggage/Cargo Compartments: Max. 50 kg in baggage compartment in the cabin of the mechanic, in Normal category only.

22. Wheels and Tyres: Wheel of main landing gear K 42-1100.00 with tyre BARUM or MITAS 610 x 215 model 1 and BARUM or MITAS 610 x 215 model 3;

Wheel of rear landing gear K 41-1100.00 with tyre BARUM or MITAS 290 x 110 – 4.

BIV. Operating and Service Instructions

1. Flight Manual:
   - In Czech language: Letová příručka Z 137 T, date of issue 1988
     Doc. No. DO-Z137T-1011.1
   - In English language: Flight Manual Z 137 T, date of issue 1991
     Doc. No. DO-Z137T-1011.2

2. Technical Manual:
   - In Czech language: Technický popis letounu Z 137 T, date of issue 1988
     Doc. No. DO-Z137T-1021.1
   - In English language: Technical Manual of the Z 137 T Aircraft, date of issue 1991
     Doc. No. DO-Z137T-1021.2

3. Repair Manual:
   - In Czech language: Příručka pro obsluhu a údržbu letounu Z 137T, date of issue 1988
     Doc. No. DO-Z137T-1031.1

     Posezónní prohlídka letounů Z 37 T, Z 137 T,
     date of issue 1990
   - In English language: The Z 137 T Aircraft Service and Maintenance Manual,
     date of issue 1990
     Doc. No. DO-Z137T-1031.2

4. Manual for Operation:
   - In Czech language: Technický popis a návod k obsluze podvěsného agregátu
     M 83.0000-0000, date of issue 1986
   - In English language: Technical description and directions for the Attendance
     on the suspension aggregate M 83.0.0000-0000,
     date of issue 1991

     Manual of the dusting equipment for forest
     M 82.0.5000, date of issue 1991

     Manual of the dusting equipment for forest
     M 82.1.2.3.5000, date of issue 1991

     Handbook for the Z 37 T and Z 137 T aircraft with
     filling chemicals, date of issue 1991

5. Spare Parts Catalogue:
   - In Czech language: Katalog náhradních dílů Z 137 T, date of issue 1991
   - In English language: Catalogue of Agricultural Equipment spare parts of the
     Z 137 T, date of issue 1991

BV. Notes

Note 1: No general restrictions applicable. Any restrictions necessary for a single airplane to be listed in the Certificate of Airworthiness of the affected airplane

Note 2: The EASA type certification standard includes that of CAA Cz TC No. 75-03 based on individual EU member state acceptance or certification of this standard prior to 28 September 2003. Other standards confirming to TC/TCDS standards certificated by individual EU member state prior to 28 September 2003 are also acceptable.

Note 3: The EASA type certification standard includes that of CAA Cz TC No. 75-02 based on individual EU member state acceptance or certification of this standard prior to 28 September 2003. Other standards confirming to TC/TCDS standards certificated by individual EU member state prior to 28 September 2003 are also acceptable.

ADMINISTRATIVE SECTION

I Acronyms

N/A

II Type Certificate Holder Record

Current:

ZLIN AIRCRAFT A.S.
Letiště 1578
765 81 Otrokovice
CZECH REPUBLIC

Former:

Moravan k.p.
Letiště 1578
765 81 Otrokovice
CZECHOSLOVAKIA

Moravan a.s.
Letiště 1578
765 81 Otrokovice
CZECHOSLOVAKIA

MORAVAN – AEROPLANES, a.s.
Letiště 1578
765 81 Otrokovice
CZECH REPUBLIC

III Change Record

Issue	Date	Changes
Issue 1	27-Mar-2007	Transfer of Z 37 T-Series Type Design to EASA
Issue 2	24-Aug-2009	Incorporation of changed company name
Issue 3	23 July 2010	Editorial corrections and revision into standard EASA TCDS format