

MINISTÉRIO DA AERONÁUTICA
DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO
CENTRO TÉCNICO AEROESPACIAL

TYPE CERTIFICATE DATA SHEET No. EA-8904-02

Type Certificate Holder:
Witwórnia Sprzetu Komunikacyjnego
"PZL-MIELEC"
Ul. Ludowego Wajska Polskiego 3
39.300 - MIELEC - POLAND

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July 1997

This data sheet, which is a part of Type Certificate no 8904 prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

I- MODEL M18 (Normal and restricted category - Agricultural and fire fighting operations) - Approved November 9, 1989.

Engine 1 WSK "PZL-KALISZ" ASz-62IR-M18, supercharged, nine cylinders, air cooled, reduction gear ratio: 0.687/1.

Fuel Aviation fuel - 91 octanes minimum grade.

Oil Aeroshell W 100 (see also the Brazilian Airplane Flight Manual).

Engine Limits	SHP (hp)	RPM	MAP (in Hg)	ALTITUDE (ft)
Takeoff (5 min.)	967	2200	41.3	Sea Level
Max. Cont.	793	2100	35.4	Sea Level
Max. Cont.	812	2100	35.4	5000

Propeller 1 WSK "PZL-WARSZAWA" AW-2-30 four blades, constant speed metallic propeller, nominal diameter 3.3m.

Airspeed Limits (IAS)	<u>km/h (knots)</u>
VNE (never exceed)	275 (148)
VNO (max. structural cruising)	225 (121)
VA (maneuvering)	223 (120)
VFE (max. flap extended)	194 (104)

- Restricted Category (see note 4)

	km/h (knots) .
VNE (never exceed)	225 (121)
VNO (max. operating speed)	194 (104)
VA (maneuvering)	194 (104)

Maximum Weights - Normal Category (see note 4)

Takeoff	4200 kg
Landing	4200 kg

Restricted Category (see note 4)

Takeoff	4700 kg
Landing	4200 kg

C.G. Range - Normal Category (see note 4)

23% MAC (0.52 m) to 31% MAC (0.70 m) at 2800 kg
 27% MAC (0.61 m) to 31% MAC (0.70 m) at 4200 kg
 Straight line variation between points given.

- Restricted Category (see note 4)

23% MAC (0.52 m) to 28% MAC (0.63 m) at 2800 kg
 27% MAC (0.61 m) to 31% MAC (0.70 m) at 4200 kg
 28% MAC (0.63 m) to 31% MAC (0.70 m) at 4700 kg.
 Straight line variation between points given.

Empty weight None
CG range

Number of Seats 1 at +2.54 m

Max. Baggage 30 kg at + 3.33 m

Hopper Capacity - Normal Category: 1500 kg
 - Restricted Category: 2000 kg

Fuel Capacity Standard tank (total each wing) 207 l
 (usable each wing) 200 l (at +0.96 m)

Enlarged tank (total each wing) 363 l
 (usable each wing) 356 l (at +0.96 m)

(See note 1 for system unusable fuel)

Oil Capacity 70,0 / at -0.49 m (35 / unusable)
(See note 1 for system undrainable oil)

Control surface	Aileron	Up	21° ($\pm 1^\circ$)	Down	17° ($\pm 1^\circ$)
Deflections	Elevator	Up	27° ($\pm 1^\circ$)	Down	17° ($\pm 1^\circ$)
	Rudder	Left	23° ($\pm 1^\circ$)	Right	23° ($\pm 1^\circ$)
	Elev. trim	Up	10° ($\pm 1^\circ$)	Down	17° ($\pm 1^\circ$)
	Ail. trim	Up	7.5° ($\pm 2^\circ$)	Down	7.5° ($\pm 2^\circ$)
	Rud. Trim	Left	13° ($\pm 2^\circ$)	Right	13° ($\pm 2^\circ$)
	Flaps	0° to	15° ($\pm 1^\circ$)		

Equipment The basic required equipment as described in the applicable airworthiness regulations (see certification basis) must be installed in the airplane for certification. In addition, the Brazilian Airplane Flight Manual whose original issue was CACA approved on June 30, 1989, must be on board of the aircraft at all times. Anyone of the agricultural or fire fighting dispersing equipment listed below may be installed in the aircraft:

1. Mechanical system for spraying (P/N D98.000/01.0 or D98.000/02.0)
2. Mechanical system for dusting (P/N D98.000/06.0)
3. Electrohydraulic sys. for spraying (P/N D98.000/11.0 or P/N D98.000/18.0)
4. Electrohydraulic sys. for dusting (P/N D98.000/16.0)
5. Fire fighting installation (P/N D98.000/07.0 or D98.000/09.0)

Serial Numbers Eligible All aircraft S/N when in compliance with the Brazilian requirements for acceptance of the WSK M18 aircraft established in the CTA Report H10-1010, revision 05 dated November 08, 89 or subsequent.

II- MODEL M18A (Normal and restricted category - Agricultural and fire fighting operations) - Approved November 9, 1989.

Model M18A differs of model M18 by the installation of an observer seat behind the pilot's seat.

Engine 1 WSK "PZL-KALISZ" ASz-62IR-M18, supercharged, nine cylinders, air cooled, reduction gear ratio: 0.687/1.

Fuel Aviation fuel - 91 octanes minimum grade.

Oil Aeroshell W 100 (see also the Brazilian Airplane Flight Manual).

Engine Limits	SHP	RPM	MAP	ALTITUDE
	(hp)	_____	(in Hg)	(ft)
Takeoff (5 min)	967	2200	41.3	Sea Level
Max. Cont.	793	2100	35.4	Sea Level
Max. Cont.	812	2100	35.4	5000

Propeller 1 WSK "PZL-WARSZAWA" AW-2-30 four blades, constant speed metallic propeller, nominal diameter 3.3m.

Airspeed Limits (IAS) - Normal Category (see note 4)

	<u>km/h (knots)</u>
VNE (never exceed)	275 (148)
VNO (max. structural cruising)	225 (121)
VA (maneuvering)	223 (120)
VFE (max. flap extended)	194 (104)

- Restricted Category (see note 4)

	<u>km/h (knots)</u>
VNE (never exceed)	225 (121)
VNO (max. operating speed)	194 (104)
VA (maneuvering)	194 (104)

Maximum Weights - Normal Category (see note 4)

Takeoff	4200 kg
Landing	4200 kg

Restricted Category (see note 4)

Takeoff	4700 kg
Landing	4200 kg

C.G. Range - Normal Category (see note 4)

23% MAC (0.52 m) to 31% MAC (0.70 m) at 2800 kg
 27% MAC (0.61 m) to 31% MAC (0.70 m) at 4200 kg
 Straight line variation between points given.

- Restricted Category (see note 4)

23% MAC (0.52 m) to 31% MAC (0.70 m) at 2800 kg
 27% MAC (0.61 m) to 31% MAC (0.70 m) at 4200 kg
 28% MAC (0.63 m) to 31% MAC (0.70 m) at 4700 kg.
 Straight line variation between points given.

Empty weight CG range None

Number of Seats 2 - One seat at +2.54 m and other at +3.40 m

Max. Baggage	30 kg at +3.9 m		
Hopper Capacity	- Normal Category: 1500 kg - Restricted Category: 2000 kg		
Fuel Capacity	standard tank	(total each wing)	207 l
		(usable each wing)	200 l (at +0.96 m)
	enlarged tank	(total each wing)	363 l
		(usable each wing)	356 l (at +0.96 m)
	(See note 1 for system unusable fuel)		
Oil Capacity	70,0 l at -0.49 m (35 l unusable) (See note 1 for system undrainable oil)		
Control surface Deflections	Aileron	Up 21° (±1°)	Down 17° (±1°)
	Elevator	Up 27° (±1°)	Down 17° (±1°)
	Rudder	Left 23° (±1°)	Right 23° (±1°)
	Elev. trim	Up 10° (±1°)	Down 17° (±1°)
	Ail. trim	Up 7.5° (±2°)	Down 7.5° (±2°)
	Rud. Trim	Left 13° (±2°)	Right 13° (±2°)
	Flaps	0° to 15° (±1°)	
Equipment	<p>The basic required equipment as described in the applicable airworthiness regulations (see certification basis) must be installed in the airplane for certification. In addition, the Brazilian Airplane Flight Manual whose original issue was CACA approved on June 30, 1989, must be on board of the aircraft at all times. Anyone of the agricultural or fire fighting dispersing equipment listed below may be installed in the aircraft:</p> <ol style="list-style-type: none"> 1. Mechanical system for spraying (P/N D98.000/01.0 or D98.000/02.0) 2. Mechanical system for dusting (P/N D98.000/06.0) 3. Electrohydraulic sys. for spraying (P/N D98.000/11.0 or P/N D98.000/18.0) 4. Electrohydraulic sys. for dusting (P/N D98.000/16.0) 5. Fire fighting installation (P/N D98.000/07.0 or D98.000/09.0) 		
Serial Numbers Eligible	All aircraft S/N when in compliance with the Brazilian requirements for acceptance of the WSK M18A aircraft established in the CTA Report H10-1010, revision 05 dated November 08, 89 or subsequent.		

III- MODEL M18B (Normal and restricted category - Agricultural and fire fighting operations) - Approved June 28,1996.

Model M18B differs of model M18 by installation of modified horizontal tail and increased up to 32% rear C.G. position.

Engine 1 WSK "PZL-KALISZ" ASz-62IR-M18, supercharged, nine cylinders, air Cooled, reduction gear ratio: 0.687/1.

Fuel Aviation fuel - 91 octanes minimum grade.

Oil Aeroshell W 100 (see also the Brazilian Airplane Flight Manual).

Engine Limits	SHP (hp)	RPM	MAP (in Hg)	ALTITUDE (ft)
Takeoff (5 min)	967	2200	41.3	Sea Level
Max. Cont.	793	2100	35.4	Sea Level
Max. Cont.	812	2100	35.4	5000

Propeller 1 WSK "PZL-WARSZAWA" AW-2-30 four blades, constant speed metallic propeller, nominal diameter 3.3m.

Airspeed Limits (IAS)	- Normal Category (see note 4)		<u>km/h (knots)</u>
	VNE (never exceed)		275 (148)
	VNO (max. structural cruising)		225 (121)
	VA (maneuvering)		223 (120)
	VFE (max. flap extended)		194 (104)
	- Restricted Category (see note 4)		<u>km/h (knots)</u>
	VNE (never exceed)		225 (121)
	VNO (max. operating speed)		194 (104)
	VA (maneuvering)	194	(104)

Maximum Weights	- Normal Category (see note 4)	
	Takeoff	4200 kg
	Landing	4200 kg
	Restricted Category (see note 4)	
	Takeoff	5300 kg
	Landing	4200 kg

C.G. Range	<p>- Normal Category (see note 4)</p> <p>23% MAC (0.52 m) to 31% MAC (0.70 m) at 2800 kg 27% MAC (0.61 m) to 31% MAC (0.70 m) at 4200 kg Straight line variation between points given.</p> <p>- Restricted Category (see notes 4 and 5)</p> <p>23% MAC (0.52 m) to 31% MAC (0.70 m) at 2800 kg 27% MAC (0.61 m) to 31% MAC (0.70 m) at 4200 kg 29.% MAC (0.65 m) to 31% MAC (0.70 m) at 5300 kg. Straight line variation between points given.</p>			
Empty weight CG range	None			
Number of Seats	2 - (1 pilot and occupant in mechanic's cabin) (Check AFM Section 6 for weight & balance)			
Max. Baggage	30 kg at + 4.00 m (check AFM section 6 for lower loads)			
Hopper Capacity	<p>- Normal Category: 1500 kg</p> <p>- Restricted Category: 2200 kg</p>			
Fuel Capacity	726 l (Check AFM Section 6 for lower loads) (See note 1 for system unusable fuel)			
Oil Capacity	70,0 l at -0.49 m (35 l unusable) (See note 1 for system undrainable oil)			
Control surface Deflections	Aileron	Up	21° (± 1°)	Down 17° (± 1°)
	Elevator	Up	27° (± 1°)	Down 17° (± 1°)
	Rudder	Left	23° (± 1°)	Right 23° (± 1°)
	Elev. trim	Up	13° (- 1°)	Down 15° (- 1°)
	Ail. trim	Up	7.30° (± 2°)	Down 7.30° (± 2°)
	Rud. Trim	Left	13° (± 2°)	Right 13° (± 2°)
	Flaps for Takeoff		15°	
	for Landing		30°	

Equipment

The basic required equipment as described in the applicable airworthiness regulations (see certification basis) must be installed in the airplane for certification. In addition, the Brazilian Airplane Flight Manual whose original issue was CACA approved on June 18, 1996, must be on board of the aircraft at all times. Anyone of the agricultural or fire fighting dispersing equipment listed below may be installed in the aircraft:

1. Mechanical system for spraying (P/N D98.000/01.0, P/N 98.000/02.0, P/N D98.000/03.0 or P/N D98.000/04.0)
2. Mechanical system for dusting (P/N D98.000/05.0 or D98.000/06.0)
3. Electrohydraulic sys. for spraying (P/N D98.000/10.0, P/N D98.000/11.0 or P/N D98.000/18.0)
4. Fire fighting installation (P/N D98.000/07.0 or D98.000/09.00)
5. Electrohydraulic sys. for dusting (P/N D98.000/13.0 or P/N D98.000/16.0)

Serial Numbers Eligible

All aircraft S/N when in compliance with the Brazilian requirements for acceptance of the WSK M18B aircraft established in the CTA Report H10-1010, revision 05 dated November 08, 89 or subsequent.

DATA PERTINENT TO ALL MODELS**Datum**

Wing leading edge.

MAC

2.261 m.

MAC Leading edge

4 mm from datum.

Leveling Means

Longitudinal: foot step leveled
Transverse : wing spar at center wing leveled.

Import Requirements

A Brazilian Airworthiness Certificate may be issued on the basis of the Polish Central Administration of Civil Aviation (CACA) Export Certificate of Airworthiness signed by a CACA representative and containing the following statement: "The airplane covered by this certificate has been examined and found to conform to the Brazilian approved type design under Type Certificate nº 8904, and to be in condition for safe operation".

Certification Basis

RBHA 21.29 and the RBHA 23 up to Amendment 16 (Normal Category) and RBHA 21.25 (Restricted Category) - see note 4. Equivalent safety findings in respect to RBHA 23.1545(a), 23.781 and 23.777 (d) were accepted to permit the airspeed indicator not to be marked in calibrated airspeed and the flap controls (push buttons) to be installed in the throttle lever.

NOTES**NOTE 1*****MODEL M18/M18A/M18B***

Unusable fuel in the system is 14 l (at + 0.152 m from datum).
Undrainable oil in the system is 1.9 l (at -0.135 m from datum).

NOTE 2***MODEL M18/M18A /M18B***

All placards listed in the CTA report H10-1010 rev 5 or subsequent shall be installed in the appropriated locations.

NOTE 3***MODEL M18/M18A/M18B***

The airframe service life limit is 6000 flight hours, according to the document Brazilian Airplane Description and Service Manual PZL M18/M18A/ M18B - DROMADER- equipped with ASz-62IR-M18 engine, Airworthiness Limitations, Section 8, dated Nov. 30, 96. This airworthiness limitation may not be changed without CTA approval.

NOTE 4***MODEL M18/M18A***

The Normal Category approval is granted for the aircraft in clean configuration (no agricultural equipment installed except hopper and its door) - Limit maneuvering load factors: + 3.4; - 1.4.
The Restricted Category approval is granted for all agricultural/fire fighting configurations listed under paragraph "equipment". - Limit maneuvering load factors : + 3.0; - 1,2.
In the restricted category operations the observer seat shall not be occupied.

MODEL M18B

The Normal Category approval is granted for the aircraft in clean configuration (no agricultural equipment installed except hopper and its door) - Limit maneuvering load factors: + 3.4; - 1.4.
The Restricted Category approval is granted for all agricultural/fire fighting configurations listed under paragraph "equipment". - Limit maneuvering load factors : + 2.8; - 1.1.
In the restricted category operations the observer seat shall not be occupied.

NOTE 5***MODEL M18B***

For the spraying version with AU-3000 AU-5000 atomizers, the rearmost C.G. position in 32% MAC is permitted within the whole range of weights.

END