# MINISTÉRIO DA AERONÁUTICA DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO CENTRO TÉCNICO AEROESPACIAL

<b>TYPE CERTIFICATE DATA SHEET No. EA-8904-02</b>	PZL MIELEC
Type Certificate Holder:	Page 1
Witwórnia Sprzetu Komunikacyjnego	M18
"PZL-MIELEC"	M18A
Ul. Ludowego Wajska Polskiego 3	M18B
39.300 - MIELEC - POLAND	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-		<b>rmal and restricted category - Agricultural and fire fighting</b> ed 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 oct	tanes mini	mum grade			
	Oil	Aeroshell W 100 (see	e also the l	Brazilian A	irplane Flig	ht Manual).	
	Engine Limits		SHP (hp)	RPM	MAP <u>(in Hg)</u>	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-WARS metallic propeller, no				constant speed	
	Airspeed Limits	-Normal Category (s	ee note 4)				
	(IAS)	<u>km/h (knots)</u>					
		VNE (never exceed	/		(	48)	
		VNO (max. structu		g)	225 (1)	· · · · · · · · · · · · · · · · · · ·	
		VA (maneuvering)				20)	
		VFE (max. flap ext	ended)		194 (1	04)	

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	- Restricted Category VNE (never exceed VNO (max. operati VA (maneuvering)	d) ing speed)	<u>km/h (knots)</u> 225 (121) 194 (104) (104)	
Maximum Weights	- Normal Category (	see note 4)		
	Takeoff Landing		4200 kg 4200 kg	
	Restricted Category	y (see note 4)		
	Takeoff Landing		4700 kg 4200 kg	
C.G. Range	- Normal Category (	,		
	23% MAC (0.52 m) 27% MAC (0.61 m) Straight line variation	to 31% MAC (0	.70 m) at 2800 kg .70 m) at 4200 kg	
	- Restricted Categor	y (see note 4)		
	23% MAC (0.52 m) 27% MAC (0.61 m) 28% MAC (0.63 m) Straight line variation	to 31% MAC (0	.63 m) at 2800 kg .70 m) at 4200 kg .70 m) at 4700 kg	
Empty weight CG range	None			
Number of Seats	1 at +2.54 m			
Max. Baggage	30 kg at + 3.33 m			
Hopper Capacity	- Normal Category: - Restricted Category	•		
Fuel Capacity	Standard tank (usab)	(total each wing) le each wing)	207 / 200 / (at +0.9	96 m)
	Enlarged tank (usabl (See note 1 for system)	(total each wing) le each wing) m unusable fuel)	363 / 356 / (at +0.9	96 m)

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

<b>Control surface</b>	Aileron	Up	21° (±1°)	Down	17° (± 1°)
Deflections	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°)		

EquipmentThe basic required equipment as described in the applicable<br/>airworthiness regulations (see certification basis) must be installed in<br/>the airplane for certification. In addition, the Brazilian Airplane<br/>Flight Manual whose original issue was CACA approved on June<br/>30, 1989, must be on board of the aircraft at all times. Anyone of<br/>the agricultural or fire fighting dispersing equipment listed below<br/>may be installed in the aircraft:<br/>1. Mechanical system for spraying (P/N D98.000/01.0 or D98.000/02.0)<br/>2. Mechanical system for dusting (P/N D98.000/01.0 or P/N D98.000/18.0)<br/>4. Electrohydraulic sys. for spraying (P/N D98.000/16.0)

5. Fire fighting installation (P/N D98.000/07.0 or D98.000/09.0)

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, reduct	ion gear ratio: 0.68	87/1.	

- **Fuel** Aviation fuel 91 octanes minimum grade.
- Oil Aeroshell W 100 (see also the Brazilian Airplane Flight Manual).

Serial NumbersAll aircraft S/N when in compliance with the BrazilianEligiblerequirements for acceptance of the WSK M18 aircraft<br/>established in the CTA Report H10-1010, revision 05 dated<br/>November 08, 89 or subsequent.

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Engine Limits		SHP <u>(hp)</u>	RPM	MAP <u>(in Hg)</u>	ALTITUDE (ft)
	Takeoff (5 min) Max. Cont. Max. Cont.	967 793 812	2200 2100 2100	41.3 35.4 35.4	Sea Level Sea Level 5000
Propeller	1 WSK "PZL-WAI metallic propeller,				constant speed
Airspeed Limits (IAS)	<ul> <li>Normal Category</li> <li>VNE (never exceed VNO (max. struct)</li> <li>VA (maneuvering)</li> <li>VFE (max. flap exceed)</li> <li>Restricted Categoria</li> <li>VNE (never exceed)</li> <li>VNE (max. operation)</li> <li>VA (maneuvering)</li> </ul>	ed) cural cruising g) xtended) ory (see note ed ) tting speed)	g)	<u>km/h (kr</u> 275 (1) 225 (1) 223 (1) 194 (1) <u>km/h (kr</u> 225 (1) 194 (1) (104)	48) 21) 20) 04) <u>nots) .</u> 21)
Maximum Weights	- Normal Category Takeoff Landing Restricted Catego Takeoff Landing			4200 kg 4200 kg 4700 kg 4200 kg	
C.G. Range	<ul> <li>Normal Category 23% MAC (0.52 m) 27% MAC (0.61 m) Straight line variation</li> <li>Restricted Catego 23% MAC (0.52 m) 27% MAC (0.61 m) 28% MAC (0.63 m) Straight line variation</li> </ul>	to 3 to 3 n between poin ory (see note to 3 to 3 to 3	1% MAC (0. 1% MAC (0. nts given. 2 4) 1% MAC (0. 1% MAC (0. 1% MAC (0.	.70 m) at 2800 .70 m) at 420 .70 m )) at 280 .70 m)at 4200 .70 m) at 4200 .70 m) at 4700	0 kg 00 kg kg
Empty weight CG range	None				
Number of Seats	2 - One seat at +2.5	54 m and o	other at $+3$ .	40 m	

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Max. Baggage	30 kg at +3.9	9 m			
Hopper Capacity	- Normal Cate - Restricted C	0 1	U		
Fuel Capacity	standard tank		(total each w e each wing)	ring)	207 / 200 / (at +0.96 m)
	enlarged tank	(usabl	(total each w e each wing) n unusable fuel	0,	363 / 356 / (at +0.96 m)
Oil Capacity	70,0 / at -0.49 (See note 1 fo		/ unusable) n undrainable c	oil)	
Control surface Deflections	Aileron Elevator Rudder Elev. trim Ail. trim Rud. Trim Flaps	Left Up	27° (± 1°)	Down Down Right Down Down Right	23° (±1°) 17° (±1°) 7.5° (±2°)
Equipment	The basic required equipment as described in the applicabl airworthiness regulations (see certification basis) must be installed if the airplane for certification. In addition, the Brazilian Airplan Flight Manual whose original issue was CACA approved on Jun 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 D98.000/01.0 or P/N D98.000/18.0) 4. Electrohydraulic sys. for spraying (P/N D98.000/16.0) 5. Fire fighting installation (P/N D98.000/07.0 or D98.000/09.0)			basis) must be installed in the Brazilian Airplane CACA approved on June at all times. Anyone of g equipment listed below 1.0 or D98.000/02.0) 5.0) /11.0 or P/N D98.000/18.0) 16.0)	
Serial Numbers Eligible	requirements	for a for a		the V	with the Brazilian WSK M18A aircraft 1010, revision 05 dated

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III-	MODEL M18B (1) operations) - Approx	Normal and restricted oved June 28,1996.	ed category	y - Agricu	<u>ltural a</u>	nd fire	<u>fighting</u>		
	Model M18B differs up to 32% rear C.G.	of model M18 by inst position.	allation of 1	nodified ho	rizontal	tail and i	ncreased		
	Engine		1 WSK "PZL-KALISZ" ASz-62IR-M18, supercharged, nine cylinders, air Cooled, reduction gear ratio: 0.687/1.						
	Fuel	Aviation fuel - 91 o	ctanes mini	mum grade.					
	Oil	Aeroshell W 100 (se	Aeroshell W 100 (see also the Brazilian Airplane Flight Manual).				nual).		
	Engine Limits		SHP <u>(hp)</u>	RPM	MAP <u>(in Hg)</u>		TITUDE <u>(ft)</u>		
		Takeoff (5 min) Max. Cont. Max. Cont.	967 793 812	2200 2100 2100	41.3 35.4 35.4	Sea	a Level a Level 000		
	Propeller	1 WSK "PZL-WAF metallic propeller, 1				es, consta	int speed		
	Airspeed Limits (IAS)	- Normal Category VNE (never excee VNO (max. struct VA (maneuvering VFE (max. flap ex	ed) ural cruising g)		275 225 223	( <u>knots</u> ) (148) (121) (120) (104)			
		- Restricted Catego VNE (never excee VNO (max. opera VA (maneuvering	ed ) ting speed)		225	( <u>knots)</u> (121) (104)			
Max	imum Weights	- Normal Category Takeoff	(see note 4)	)	4200	U			
		Landing Restricted Catego Takeoff Landing	ry (see note	: 4)	4200 ] 5300 ] 4200 ]	kg			

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C.G. Range	27% MAC (0.61 m Straight line variation - Restricted Category	) to 31% MAC ) to 31% MAC on between points give	(0.70 m) at 4200 kg	g
	29.% MAC (0.65 m	) to 31% MAC a) to 31% MAC bon between points give	(0.70 m) at 5300 kg	-
Empty weight CG range	None			
Number of Seats	2 - (1 pilot and occu (Check AFM See	pant in mechanic's c ction 6 for weight &	· · · · · · · · · · · · · · · · · · ·	
Max. Baggage	30 kg at + 4.00 m ( check AFM section 6 for lower loads)			
Hopper Capacity	- Normal Category: 1 - Restricted Category	e		
Fuel Capacity	<b>`</b>	I Section 6 for lower or system unusable fu	· ·	
Oil Capacity	70,0 / at -0.49 m (3: (See note 1 for system)	,		
Control surface Deflections	AileronUpElevatorUpRudderLeftElev. trimUpAil. trimUpRud. TrimLeftFlaps for Takeoff for Landing	$21^{\circ} (\pm 1^{\circ})$ Down $27^{\circ} (\pm 1^{\circ})$ Down $23^{\circ} (\pm 1^{\circ})$ Right $13^{\circ} (-1^{\circ})$ Down $7.30' (\pm 2^{\circ})$ Down $13^{\circ} (\pm 2^{\circ})$ Right $15^{\circ}$ $30^{\circ}$	$\begin{array}{l} 17^{\circ} (\pm 1^{\circ}) \\ 23^{\circ} (\pm 1^{\circ}) \\ 15^{\circ} (-1^{\circ}) \\ 7.30^{\circ} (\pm 2^{\circ}) \end{array}$	

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Equipment	<ul> <li>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:</li> <li>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)</li> <li>2. Mechanical system for dusting (P/N D98.000/05.0 or D98.000/06.0)</li> <li>3. Electrohydraulic sys. for spraying (P/N D98.000/10.0, P/N D98.000/11.0 or P/N D98.000/18.0)</li> <li>4. Fire fighting installation (P/N D98.000/07.0 or D98.000/09.00)</li> <li>5. Electrohydraulic sys. for dusting (P/N D98.000/13.0 or P/N D98.000/16.0 )</li> </ul>
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 A	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 RequirementsA Brazilian Airworthiness Certificate may be issued on the basis<br/>of the Polish Central Administration of Civil Aviation (CACA)<br/>Export Certificate of Airworthiness signed by a CACA<br/>representative and containing the following statement: "The<br/>airplane covered by this certificate has been examined and found<br/>to conform to the Brazilian approved type design under Type<br/>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.

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#### **NOTES**

## NOTE 1

# MODEL M18/M18A/M18B

Unusable fuel in the system is 141(at + 0.152 m from datum). Undrainable oil in the system is 1.91(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

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