TYPE-CERTIFICATE

DATA SHEET

NO. EASA.A.061

for
PZL-104 WILGA Series

Type Certificate Holder
AIRBUS POLAND S.A.

Al. Krakowska 110/114
02-256 Warszawa
Poland

For models:
PZL-104 Wilga 80
PZL-104M Wilga 2000
PZL-104MN Wilga 2000
PZL-104MF Wilga 2000
PZL-104MA Wilga 2000
PZL-104 Wilga 32
PZL-104 Wilga 32A
PZL-104 Wilga 35
PZL-104 Wilga 35A

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SECTION A: PZL-104 WILGA 80

A.I. General

1. Type/ Model	
1.1 Type	PZL-104 Wilga
1.2 Model	PZL-104 Wilga 80
2. Airworthiness Category	Normal
3. Manufacturer	PZL „Warszawa-Okęcie” Al. Krakowska 110/114 02-256 Warszawa Poland See note 3
4. Type Certification Application Date	August 2, 1978
5. State of Design Authority	Poland
6. State of Design Authority Type Certificate Date	February 25, 1980
7. EASA Type Certification Date	November 16, 2005 (TC No. BB-130)

A.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements	August 2, 1978
2. Airworthiness Requirements	FAR 23 dated February 1, 1965 as amended through Amendment 23-20 effective September 1, 1977.
3. Special Conditions	Canadian Engineering and Inspection Manual, Part II, Chap. 1. Section 1.1. Canada 1971 for version with ski landing gear
4. Exemptions	None
5. Deviations	None
6. Equivalent Safety Findings	None
7. Environmental Protection	ICAO, Annex 16, Volume 1, Chapter 6; Edition 1978

A.III. Technical Characteristics and Operational Limitations

1. Type Design Definition	List of Main Drawings of the PZL-104 Wilga 80 Airplane, Edition B, December 1985
2. Description	Single radial engine, fixed landing gear with tail wheel, four-seat cantilever high-wing, all metal monoplane
3. Equipment	Refer to Pilot's Operating Handbook of PZL-104 Wilga 80, Sec. 5.4
4. Dimensions	
Span	11.134 m (36 ft 6.3 in)
Length	8.10 m (26 ft 6.9 in)
Height	2.96 m (9 ft 8.5 in)
Wing Area	15.5 m² (166.8 sq. ft)
5. Engine	
5.1. Model	AI-14 RA Serial No. distinguished by the phrase "KAF"
5.2 Type Certificate	CB-052 - issued by CAA in Poland
5.3 Limitations	Max allowable rotational speed 2350 rpm (5 min.) at sea level For other engine limits refer to AFM

6. Load factors

Maximum permissible load factor in flight with maximum mass of 1300 kg:

	Flaps up	Flaps down
Max. positive load factor	3.8	2.0
Max. negative load factor	-1.52	0

7. Propeller	
7.1 Model	US 122 000 hydraulically controlled, constant speed
7.2 Type Certificate	DB-118 - issued by CAA in Poland
7.3 Number of blades	2
7.4 Diameter	2650 mm (104.3 in)
8. Fluids	
8.1 Fuel	Minimum 90 Octane Aviation gasoline. Maximum tetraethyllead contents: 2.5 g/kg (0.04 oz/lb) of fuel
8.2 Oil	Mineral aviation oil of 20÷22 eSt (3.07÷3.19° E) viscosity at 100°C for summer and winter operation; e.g: MS-20 or MK-22 acc. to GOST 1013-49, Aeroshell W100 or equivalents

9. Fluid capacities

9.1 Fuel	Standard: 172 l (45.4 US Gallons) 170 l (45 US Gallons) usable Supplementary tank capacity: 92.2 l (24.3 US Gallons) 90 l (23.8 US Gallons) usable
9.2 Oil	15.5 l (16.4 US qt)

10. Air Speeds

Never exceed speed V_{NE}:	Standard 234 km/h (126 kts)
Normal operating speed V_{NO}:	208 km/h (112 kts)
Manoeuvring speed V_A:	178 km/h (96 kts)
Flaps extended speed V_{FE}:	156 km/h (84 kts)
	Version for parachute jumper lifting
Never exceed speed V_{NE}:	200 km/h (108 kts)
Normal operating speed V_{NO}:	180 km/h (97 kts)

11. Maximum Operating Altitude — Not defined

12. Approved Operations Capability — Day/Night-VFR/IFR
Flight into known icing conditions - prohibited.

13. Maximum Masses

Take-off:	1300 kg (3086 lb)
Zero fuel	1260 kg (2778 lb)
Landing	1265 kg (2789 lb)

14. Centre of Gravity Range

Forward limit:	0.425 m (16.7 inches) aft of datum
Rear limit:	0.616 m (24.3 inches) aft of datum
Airplane provided with ski landing gear	
Forward limit:	0.480 m (18.9 inches) aft of datum
Rear limit:	0.616 m (24.3 inches) aft of datum

15. Datum — A plane tangent to the leading edge of the wing slat and perpendicular to the mean aerodynamic chord (MCA)

16. Control surface deflections

		Displacement value
Rudder displacement:		
	Left	26±2°
	Right	26±2°
Elevator displacement:		
	Up	38±1°
	Down	18±2°
Trimming tab displacement:		
	Up	30±2°
	Down	30±2°
Aileron displacement:		
	Up	26±2°
	Down	16±2°
Flap displacement:		
	for take-off	21±2°
	for landing	44±2°

17. Levelling Means — Left side of fuselage - station 6 - 680 mm above station 5 (refer to AFM, Sect. 5.1.)

18. Minimum Flight Crew — 1 (Pilot)

19. Maximum Passenger Seating Capacity — 3

Version for long lasting, long distance flights with supplementary tank

Maximum Passenger Seating Capacity: 1

20. Baggage/ Cargo Compartments

Max. allowable Load: 30 kg (66 lb) in baggage compartment

21. Wheels and Tyres

Main Wheel Tyre Size — STOMIL 500 x 200 mm (19.7 x 7.9 in)

Tail Wheel Tyre Size — STOMIL 255 x 110 mm (10.0 x 4.3 in)

22. (Reserved)

A.IV. Operating and Service Instructions

1. Flight Manual	Pilot's Operating Handbook. PZL-104 Wilga 80 Issued June 15, 1979; Rev. 6 as per February 17, 1992; (or latest approved revision)
2. Maintenance Manual	Airplane Maintenance Manual and Scheduled Inspections of the PZL-104 Wilga 80 Airplane Date of issue 1980; Rev. 5 as per October 30, 1990; (or latest approved revision)
3. Structural Repair Manual	Repair Manual for the PZL-104 Wilga 80 Aircraft Date of issue 1979; Rev. 3 as per April 7, 2009; (or latest approved revision)
4. Weight and Balance Manual	See Airplane Flight Manual, Section 5
5. Illustrated Parts Catalogue	Catalogue of Spare Parts for the PZL-104 Wilga 80 Airplane Date of issue 1982; (or latest approved revision)

A.V. Notes

Note 1.

A current Weight and Balance Report must be provided with each airplane at the time of original Airworthiness Certification and all times thereafter. The airplane Weight and Balance Report must include:

- Weight of the empty airplane,
- Position of C.G.,
- Unusable fuel quantity in empty weight,
- Full oil quantity in empty weight,
- List of equipment in empty weight.

Note 2.

Approved Noise Levels in accordance with ICAO Annex 16, Volume 1, Chapter 6; Edition 1978:
61.8 dB(A)

Note 3.

Currently: Airbus Poland S.A.

Note 4.

PZL-104 Wilga 80, reg. ZS-NPU; SN: CF 20900891 has been removed from TCDS EASA.A.061.

SECTION B: PZL-104M WILGA 2000

B.I. General

1. Type/ Model	
1.1 Type	PZL-104 Wilga
1.2 Model	PZL-104M Wilga 2000
2. Airworthiness Category	Normal
3. Manufacturer	EADS PZL „Warszawa-Okęcie" S.A. Al. Krakowska 110/114 02-256 Warszawa Poland See note 5
4. Type Certification Application Date	June 22, 1995
5. State of Design Authority	Poland
6. State of Design Authority Type Certificate Date	July 11, 1997
7. EASA Type Certification Date	November 16, 2005 (TC No. BB-130)

B.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements	June 22, 1995

2. Airworthiness Requirements

FAR 23 dated February 1, 1965 as amended through Amendment 23-20 effective September 1, 1977;

FAR 23 Subpart B as amended through Amendment 23-45 effective September 7, 1993;

FAR 23 Subpart E & F as amended through Amendment 23-30 effective March 29, 1984;

FAR 23 Appendix F as amended through Amendment 23-34 effective January 15, 1987;

FAR 23 Appendix G as amended through Amendment 23-34 effective January 15, 1987;

FAR 36 dated December 1, 1969 as amended through Amendment 36-22 effective October 13, 1999;

3. Special Conditions	BCAR, Section K, Chapter K4-10 issued 10th April, 1974 - as far as glider and banner towing is concerned
4. Exemptions	None
5. Deviations	None
6. Equivalent Safety Findings	None
7. Environmental Protection	ICAO, Annex 16, Volume 1, Chapter 10; Edition 1993

B.III. Technical Characteristics and Operational Limitations

1. Type Design Definition — Master Drawings List of the PZL-104M Wilga 2000 Airplane, Issue 8, April 19, 2004

2. Description — Single radial engine, fixed landing gear with tail wheel, four-seat cantilever high-wing, all metal monoplane

3. Equipment — Master Equipment List of the PZL-104M WILGA 2000 Airplane, Issue 9, April 19, 2004
Refer also to Airplane Flight Manual

3. Dimensions

Span	11.28 m (37 ft 0.1 in)
Length	8.46 m (27 ft 9.1 in)
Height	2.58 m (8 ft 5.6 in)
Wing Area	15.5 m² (166.8 sq ft)

5. Engine

5.1. Model — LYCOMING IO-540 K1J5D
LYCOMING IO-540 K1D5
LYCOMING IO-540 K1B5

5.2 Type Certificate — 1E4 – issued by FAA

5.3 Limitations

Maximum take-off and continuous rating 223.7 KW (304.2 metric HP) (300 HP)
Maximum engine speed for take-off and continuous rating 2700 rpm
For other engine limits refer to AFM

6. Load factors

Maximum permissible load factor in flight with maximum mass of 1400 kg:

	Flaps up	Flaps down
Max. positive load factor	3.8	2.0
Max. negative load factor	-1.52	0

7. Propeller

7.1 Model

HARTZELL HC-C3YR-1RF/F8468A-6R - concerns version of MTOW of 1400 kg constant speed
HARTZELL HC-C3YR-1RF/F8068 - concerns version of MTOW of 1400 kg & 1500 kg constant speed

7.2 Type Certificate P25EA – issued by FAA

7.3 Number of blades 3

7.4 Diameter

HARTZELL HC-C3YR-1RF/F8468A-6R

Maximum diameter 2032 mm (80 in)

Minimum diameter allowed for repairs 1930.4 mm (76 in)

HARTZELL HC-C3YR-1RF/F8068

Maximum diameter 2083 mm (82 in)

Minimum diameter allowed for repairs 1981.2 mm (78 in)

8. Fluids

8.1 Fuel 100/100LL minimum grade aviation gasoline

8.2 Oil

Outside Temperature	MIL-L-6082B Spec. Mineral Grades	MIL-L-22851 Spec. Ashless Dispersant Grades
full range of temperatures		SAE 15W50 or 20W50
above +27°C (80°F)	SAE 60	SAE 60
above +16°C (60°F)	SAE 50	SAE 40 or SAE 50
-1° to 32°C (30° to 90°F)	SAE 40	SAE 40
-18° to 21°C (0° to 70°F)	SAE 30	SAE 30, 40, 20W40
below -12°C (10° F)	SAE 20	SAE 30 , 20W30

9. Fluid capacities

9.1 Fuel 392 l (103.6 US Gallons)

380 l (100.4 US Gallons) usable

9.2 Oil 11.4 l (12 U.S. qt) (integrated with engine)

9.3 Coolant system capacity

10. Air Speeds (CAS)

MTOW	**1400 kg**	**1500 kg**
Never exceed speed - V_{NE}	243 km/h (131 kts)	243 km/h (131 kts)
Normal operating speed - V_{NO}	208 km/h (112 kts)	208 km/h (112 kts)
Manoeuvring speed - V_A	185 km/h (100 kts)	192 km/h (104 kts)
Flaps extended speed - V_{FE}	162 km/h (87 kts)	162 km/h (87 kts)
Stalling speed - V_{SO}	89 km/h (48 kts)	92 km/h (50 kts)

11. Maximum Operating Altitude Not defined

12. Approved Operations Capability Day/Night-VFR/IFR

Flight into known icing conditions – prohibited

13. Maximum Masses

Take-off & Landing:	1400 kg (3086 lb)	1500 kg (3307 lb)
Zero fuel	1360 kg (2998 lb)	1427 kg (3146 lb)
Minimum in flight	1084 kg (2390 lb)	

14. Centre of Gravity Range

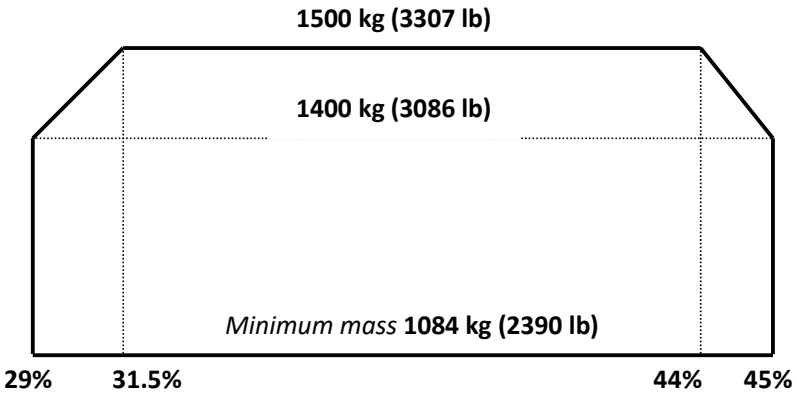
Minimum front centre of gravity location:

Q = 1500 kg (3307 lb)	31.5 % MAC - 0.441 m (17.36 in) aft of datum
Q ≤ 1400 kg (3086 lb)	29.0 % MAC - 0.406 m (16.0 in) aft of datum
	linear variation between these points

Maximum rear centre of gravity location:

Q = 1500 kg (3307 lb)	44.0 % MAC - 0.616 m (24.25 in) aft of datum
Q ≤ 1400 kg (3086 lb)	45.0 % MAC - 0.630 m (24.8 in) aft of datum
	linear variation between these points

MAC	1.4 m (55.1 in)
Position of leading edge of MAC aft of datum	0.0 m (0.0 in)



15. Datum A plane tangent to the leading edge of the wing slat and perpendicular to the mean aerodynamic chord (MCA)

16. Control surface deflections

		Displacement value
Rudder displacement:		
	Left	26±2°
	Right	26±2°
Elevator displacement:		
	Up	38±1°
	Down	18±2°
Trimming tab displacement:		
	Up	20±2°
	Down	20±2°
Aileron displacement:		
	Up	26±2°
	Down	16±2°
Flap displacement:		
	for take-off	21±2°
	for landing	44±2°

17. Levelling Means — According to rigging points, elevation of point 6 over point 5:
680 mm (26.8 in) (refer to AFM, Sect. 6.1.)

18. Minimum Flight Crew — 1 (Pilot)

19. Maximum Passenger Seating Capacity — 3

20. Baggage/ Cargo Compartments

Max. allowable Load: — 30 kg (66 lb) in baggage compartment

21. Wheels and Tyres

Main Wheel Tyre Size — STOMIL 500 x 200 mm (19.7 x 7.9 in)

Tail Wheel Tyre Size — STOMIL 255 x 110 mm (10.0 x 4.3 in)

22. Glider and banner towing

Minimum towing speed (IAS):		
gliders	δ_{KL} = 21°	110 km/h (59 kts)
	δ_{KL} = 0°	125 km/h (67 kts)
banner	δ_{KL} = 0°	125 km/h (67 kts)
Maximum towing speed (IAS), δ_{KL} = 0°		165 km/h (89 kts)
Maximum take-off and landing mass of the airplane		1400 kg (3086 lb)
Maximum total mass of airplane + glider system		1890 kg (4167 lb)
Maximum number of gliders towed		2
Maximum number of persons aboard		2 (on front seats)

Safety link between the rope and the towing hook with the breaking force not more than	9320 N (950 kg) (2094 lb)

B.IV. Operating and Service Instructions

1. Flight Manual	PZL-104 M Wilga 2000 Airplane Flight Manual, Date of issue: July, 1997; (or latest approved revision)
2. Maintenance Manual	PZL-104 M Wilga 2000 Airplane Maintenance Manual Date of issue: July, 1997; (or latest approved revision)
3. Structural Repair Manual	Repair Manual for the PZL-104M/MN/MA Wilga 2000 Aircraft Date of issue: 1999; (or latest approved revision)
4. Weight and Balance Manual	See Airplane Flight Manual, Section 6
5. Illustrated Parts Catalogue	PZL-104M/MN/MF Wilga 2000 Catalogue of Spare Parts Date of issue: 1999; (or latest approved revision)

B.V. Notes

Note 1.

A current Weight and Balance Report must be provided with each airplane at the time of original Airworthiness Certification and at all times thereafter.

The airplane Weight and Balance Report must include:

- weight of the empty airplane,
- position of C.G.,
- unusable fuel quantity in empty weight,
- full oil quantity in empty weight,
- list of equipment in empty weight.

Note 2.

Operation of the PZL-104M WILGA 2000 airplane at maximum take-off and landing mass of 1500 kg (3307 lb) is approved, providing Technical Bulletin No. 104M04045 has been implemented. Operation will be in accordance with Supplement No. 9.19 of Airplane Flight Manual.

Note 3.

Type Certificate BB-130 together with this Data Sheet is valid for PZL-104 M WILGA 2000 airplanes serial No. 00960001 and up. The certification process has been run on the airplane serial No. 00960001.

Note 4.

Approved Noise Levels in accordance with ICAO Annex 16, Volume 1, Chapter 10:

Maximum Takeoff Mass	1400 kg	Propeller HC-C3YR-1RF/F8068	85.9 ± 0.57dB(A)
		HC-C3YR-1RF/F8468A-6R	87.3 ± 0.51 dB(A)
Maximum Takeoff Mass	1500 kg	Propeller HC-C3YR-1RF/F8068	87.2 ± 0.74dB(A)

Note 5.

Currently: Airbus Poland S.A.

SECTION C: PZL-104MN WILGA 2000

C.I. General

1. Type/ Model	
1.1 Type	PZL-104 Wilga
1.2 Model	PZL-104MN Wilga 2000
2. Airworthiness Category	Normal
3. Manufacturer	EADS PZL „Warszawa-Okęcie" S.A. Al. Krakowska 110/114 02-256 Warszawa Poland See note 4
4. Type Certification Application Date	December 20, 2000
5. State of Design Authority	Poland
6. State of Design Authority Type Certificate Date	March 8, 2001
7. EASA Type Certification Date	November 16, 2005 (TC No. BB-130)

C.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements	December 20, 2000
2. Airworthiness Requirements	

FAR 23 dated February 1, 1965 as amended through Amendment 23-20 effective September 1, 1977;
FAR 23 Subpart B as amended through Amendment 23-45 effective September 7, 1993;
FAR 23 Subpart E & F as amended through Amendment 23-30 effective March 29, 1984;
FAR 23 Appendix F as amended through Amendment 23-34 effective January 15, 1987;
FAR 23 Appendix G as amended through Amendment 23-34 effective January 15, 1987;
FAR 36 dated December 1, 1969 as amended through Amendment 36-22 effective October 13, 1999;

3. Special Conditions	BCAR, Section K, Chapter K4-10 issued 10th April, 1974 - as far as glider and banner towing is concerned
4. Exemptions	None
5. Deviations	None
6. Equivalent Safety Findings	None
7. Environmental Protection	ICAO, Annex 16, Volume 1, Chapter 10; Edition 1993

C.III. Technical Characteristics and Operational Limitations

1. Type Design Definition — Master Drawings List of PZL-104MN Wilga 2000 Airplane, Issue 2, November 22, 2002

2. Description — Single radial engine, fixed landing gear with tail wheel, four-seat cantilever high-wing, all metal monoplane

3. Equipment — Master Equipment List of PZL-104 MN Wilga 2000 Airplane, Issue 2, November 22, 2002
Refer also to Airplane Flight Manual

4. Dimensions

Span	11.28 m (37 ft 0.1 in)
Length	8.46 m (27 ft 9.1 in)
Height	2.58 m (8 ft 5.6 in)
Wing Area	15.5 m² (166.8 sq ft)

5. Engine

5.1. Model — LYCOMING IO-540 K1J5D
LYCOMING IO-540 K1D5
LYCOMING IO-540 K1B5

5.2 Type Certificate — 1E4 – issued by FAA

5.3 Limitations

Maximum take-off and continuous rating 216.4 KW (294.1 metric HP) (290 HP)
Maximum engine speed for take-off and continuous rating 2575 rpm
For other engine limits refer to AFM

6. Load factors

Maximum permissible load factor in flight with maximum mass of 1400 kg:

	Flaps up	Flaps down
Max. positive load factor	3.8	2.0
Max. negative load factor	-1.52	0

7. Propeller

7.1 Model

HARTZELL HC-C3YR-1RF/F8468A-6R
constant speed
HARTZELL HC-C3YR-1RF/F8068
constant speed

7.2 Type Certificate P25EA – issued by FAA

7.3 Number of blades 3

7.4 Diameter

HARTZELL HC-C3YR-1RF/F8468A-6R

Maximum diameter	2032 mm (80 in)
Minimum diameter allowed for repairs	1930.4 mm (76 in)

HARTZELL HC-C3YR-1RF/F8068

Maximum diameter	2083 mm (82 in)
Minimum diameter allowed for repairs	1981.2 mm (78 in)

8. Fluids

8.1 Fuel 100/100LL minimum grade aviation gasoline

8.2 Oil

Outside Temperature	MIL-L-6082B Spec. Mineral Grades	MIL-L-22851 Spec. Ashless Dispersant Grades
full range of temperatures		SAE 15W50 or 20W50
above +27°C (80°F)	SAE 60	SAE 60
above +16°C (60°F)	SAE 50	SAE 40 or SAE 50
-1° to 32°C (30° to 90°F)	SAE 40	SAE 40
-18° to 21°C (0° to 70°F)	SAE 30	SAE 30, 40, 20W40
below -12°C (10° F)	SAE 20	SAE 30 , 20W30

9. Fluid capacities

9.1 Fuel 392 l (103.6 US Gallons)
380 l (100.4 US Gallons) usable

9.2 Oil 11.4 l (12 U.S. qt) (integrated with engine)

10. Air Speeds

Never exceed speed - V_{NE}	243 km/h (131 kts)
Normal operating speed - V_{NO}	208 km/h (112 kts)
Manoeuvring speed - V_A	185 km/h (100 kts)
Flaps extended speed - V_{FE}	162 km/h (87 kts)
Stalling speed - V_{SO}	89 km/h (48 kts)

11. Maximum Operating Altitude Not defined

12. Approved Operations Capability Day/Night-VFR/IFR
Flight into known icing conditions - prohibited

13. Maximum Masses

Take-off & Landing: 1400 kg (3086 lb)

Zero fuel 1360 kg (2998 lb)

14. Centre of Gravity Range

Centre of gravity location between 29.0 % MAC through 45.0 % MAC
0.406 m ÷ 0.630 m (16.0 in ÷ 24.8 in) aft of datum

MAC	1.4 m (55.1 in)
Position of leading edge of MAC aft of datum	0.0 m (0.0 in)

15. Datum — A plane tangent to the leading edge of the wing slat and perpendicular to the mean aerodynamic chord (MCA)

16. Control surface deflections

		Displacement value
Rudder displacement:		
	Left	26±2°
	Right	26±2°
Elevator displacement:		
	Up	38±1°
	Down	18±2°
Trimming tab displacement:		
	Up	20±2°
	Down	20±2°
Aileron displacement:		
	Up	26±2°
	Down	16±2°
Flap displacement:		
	for take-off	21±2°
	for landing	44±2°

17. Levelling Means — According to rigging points, elevation of point 6 over point 5:
680 mm (26.8 in) (refer to AFM, Sect. 6.1.)

18. Minimum Flight Crew — 1 (Pilot)

19. Maximum Passenger Seating Capacity — 3

20. Baggage/ Cargo Compartments

Max. allowable Load: — 30 kg (66 lb) in baggage compartment

21. Wheels and Tyres

Main Wheel Tyre Size — STOMIL 500 x 200 mm (19.7 x 7.9 in)
Tail Wheel Tyre Size — STOMIL 255 x 110 mm (10.0 x 4.3 in)

22. Glider and banner towing

Minimum towing speed (IAS):		
gliders	δ_{KL} = 21°	110 km/h (59 kts)
	δ_{KL} = 0°	125 km/h (67 kts)
banner	δ_{KL} = 0°	125 km/h (67 kts)
Maximum towing speed (IAS), δ_{KL} = 0°		165 km/h (89 kts)
Maximum take-off and landing mass of the airplane		1400 kg (3086 lb)
Maximum total mass of airplane + glider system		1890 kg (4167 lb)
Maximum number of gliders towed		2
Maximum number of persons aboard		2 (on front seats)
Safety link between the rope and the towing hook with the breaking force not more than		9320 N (950 kg) (2094 lb)

C.IV. Operating and Service Instructions

1. Flight Manual	Airplane Flight Manual for PZL-104 MN Wilga 2000, Date of issue: December, 2000; (or latest approved revision)
2. Maintenance Manual	PZL-104 MN Wilga 2000 Airplane Maintenance Manual Date of issue: December 20, 2000; (or latest approved revision)
3. Structural Repair Manual	Repair Manual for the PZL-104M/MN/MA Wilga 2000 Aircraft Date of issue: 1999; (or latest approved revision)
4. Weight and Balance Manual	See Airplane Flight Manual, Section 6
5. Illustrated Parts Catalogue	PZL-104M/MN/MF Wilga 2000 Catalogue of Spare Parts Date of issue: 1999; (or latest approved revision)

C.V. Notes

Note 1.

A current Weight and Balance Report must be provided with each airplane at the time of original Airworthiness Certification and at all times thereafter.

The airplane Weight and Balance Report must include:

- weight of the empty airplane,
- position of C.G.,
- unusable fuel quantity in empty weight,
- full oil quantity in empty weight,
- list of equipment in empty weight.

Note 2.

The type Certificate BB-130 together with this Data Sheet is valid for PZL-104 MN WILGA 2000 airplanes serial No. 00960001 and up. The certification process has been run on the airplane serial No. 00960001.

Note 3.

Approved Noise Levels in accordance with ICAO Annex 16, Volume 1, Chapter 10:

Propeller	HC-C3YR-1RF/F8068	82.25 ± 0.37 dB(A)
	HC-C3YR-1RF/F8468A-6R	85.2 ± 0.20 dB(A)

Note 4.

Currently: Airbus Poland S.A.

SECTION D: PZL-104MF WILGA 2000

D.I. General

1. Type/ Model	
1.1 Type	PZL-104 Wilga
1.2 Model	PZL-104MF Wilga 2000
2. Airworthiness Category	Normal
3. Manufacturer	EADS PZL „Warszawa-Okęcie" S.A. Al. Krakowska 110/114 02-256 Warszawa Poland See note 5
4. Type Certification Application Date	December 21, 2000
5. State of Design Authority	Poland
6. State of Design Authority Type Certificate Date	April 25, 2001
7. EASA Type Certification Date	November 16, 2005 (TC No. BB-130)

D.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements	December 21, 2000
2. Airworthiness Requirements	

FAR 23 dated February 1, 1965 as amended through Amendment 23-20 effective September 1, 1977;
FAR 23 Subpart B as amended through Amendment 23-45 effective September 7, 1993;
FAR 23 Subpart E & F as amended through Amendment 23-30 effective March 29, 1984;
FAR 23 Appendix F as amended through Amendment 23-34 effective January 15, 1987;
FAR 23 Appendix G as amended through Amendment 23-34 effective January 15, 1987;
FAR 36 dated December 1, 1969 as amended through Amendment 36-22 effective October 13, 1999;

3. Special Conditions	BCAR, Section K, Chapter K4-10 issued 10th April, 1974 - as far as glider and banner towing is concerned
4. Exemptions	None
5. Deviations	None
6. Equivalent Safety Findings	None
7. Environmental Protection	ICAO, Annex 16, Volume 1, Chapter 10; Edition 1993

D.III. Technical Characteristics and Operational Limitations

1. Type Design Definition — Master Drawings List of PZL-104MF Wilga 2000 Airplane, Issue 2, November 22, 2002

2. Description — Single radial engine, fixed landing gear with tail wheel, four-seat cantilever high-wing, all metal monoplane

3. Equipment — Master Equipment List of PZL-104MF WILGA 2000 Airplane, Issue 2, November 22, 2002.
Refer also to Airplane Flight Manual

4. Dimensions

Span	11.28 m (37 ft 0.1 in)
Length	8.46 m (27 ft 9.1 in)
Height	2.58 m (8 ft 5.6 in)
Wing Area	15.5 m² (166.8 sq ft)

5. Engine

5.1. Model — LYCOMING IO-540 K1J5D
LYCOMING IO-540 K1D5
LYCOMING IO-540 K1B5

5.2 Type Certificate — 1E4 – issued by FAA

5.3 Limitations

Maximum take-off and continuous rating 223.7 KW (304.2 metric HP) (300 HP)
Maximum engine speed for take-off and continuous rating 2700 rpm
For other engine limits refer to AFM

6. Load factors

Maximum permissible load factor in flight with maximum mass of 1400 kg:

	Flaps up	Flaps down
Max. positive load factor	3.8	2.0
Max. negative load factor	-1.52	0

7. Propeller

7.1 Model

HARTZELL HC-C3YR-1RF/F8468A-6R - concerns version of MTOW of 1400 kg constant speed

HARTZELL HC-C3YR-1RF/F8068 - concerns version of MTOW of 1400 kg & 1500 kg constant speed

7.2 Type Certificate P25EA – issued by FAA

7.3 Number of blades 3

7.4 Diameter

HARTZELL HC-C3YR-1RF/F8468A-6R

Maximum diameter	2032 mm (80 in)
Minimum diameter allowed for repairs	1930.4 mm (76 in)

HARTZELL HC-C3YR-1RF/F8068

Maximum diameter	2083 mm (82 in)
Minimum diameter allowed for repairs	1981.2 mm (78 in)

8. Fluids

8.1 Fuel 100/100LL minimum grade aviation gasoline

8.2 Oil

Outside Temperature	MIL-L-6082B Spec. Mineral Grades	MIL-L-22851 Spec. Ashless Dispersant Grades
full range of temperatures		SAE 15W50 or 20W50
above +27°C (80°F)	SAE 60	SAE 60
above +16°C (60°F)	SAE 50	SAE 40 or SAE 50
-1° to 32°C (30° to 90°F)	SAE 40	SAE 40
-18° to 21°C (0° to 70°F)	SAE 30	SAE 30, 40, 20W40
below -12°C (10° F)	SAE 20	SAE 30 , 20W30

9. Fluid capacities

9.1 Fuel 392 l (103.6 US Gallons)

380 l (100.4 US Gallons) usable

9.2 Oil 11.4 l (12 U.S. qt) (integrated with engine)

10. Air Speeds

MTOW	**1400 kg**	**1500 kg**
Never exceed speed - V_{NE}	243 km/h (131 kts)	243 km/h (131 kts)
Normal operating speed - V_{NO}	208 km/h (112 kts)	208 km/h (112 kts)
Manoeuvring speed - V_A	185 km/h (100 kts)	192 km/h (104 kts)
Flaps extended speed - V_{FE}	162 km/h (87 kts)	162 km/h (87 kts)
Stalling speed - V_{SO}	89 km/h (48 kts)	92 km/h (50 kts)

11. Maximum Operating Altitude Not defined

12. Approved Operations Capability Day/Night-VFR/IFR
Flight into known icing conditions – prohibited

13. Maximum Masses

Take-off & Landing:	1400 kg (3086 lb)	1500 kg (3307 lb)
Zero fuel	1360 kg (2998 lb)	1427 kg (3146 lb)
Minimum in flight	1084 kg (2390 lb)	

14. Centre of Gravity Range

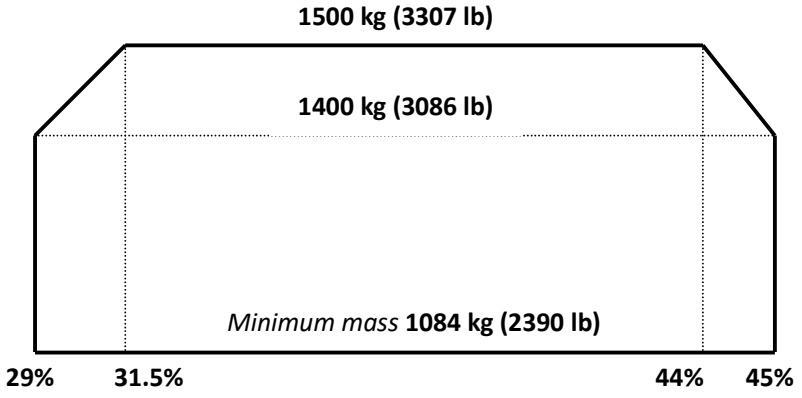
Minimum front centre of gravity location:

Q = 1500 kg (3307 lb) 31.5 % MAC - 0.441 m (17.36 in) aft of datum
Q ≤ 1400 kg (3086 lb) 29.0 % MAC - 0.406 m (16.0 in) aft of datum
linear variation between these points

Maximum rear centre of gravity location:

Q = 1500 kg (3307 lb) 44.0 % MAC - 0.616 m (24.25 in) aft of datum
Q ≤ 1400 kg (3086 lb) 45.0 % MAC - 0.630 m (24.8 in) aft of datum
linear variation between these points

MAC 1.4 m (55.1 in)
Position of leading edge of MAC aft of datum 0.0 m (0.0 in)



15. Datum — A plane tangent to the leading edge of the wing slat and perpendicular to the mean aerodynamic chord (MCA)

16. Control surface deflections

		Displacement value
Rudder displacement:		
	Left	26±2°
	Right	26±2°
Elevator displacement:		
	Up	38±1°
	Down	18±2°
Trimming tab displacement:		
	Up	20±2°
	Down	20±2°
Aileron displacement:		
	Up	26±2°
	Down	16±2°
Flap displacement:		
	for take-off	21±2°
	for landing	44±2°

17. Levelling Means — According to rigging points, elevation of point 6 over point 5:
680 mm (26.8 in) (refer to AFM, Sect. 6.1.)

18. Minimum Flight Crew — 1 (Pilot)

19. Maximum Passenger Seating Capacity — 3

20. Baggage/ Cargo Compartments

Max. allowable Load: — 30 kg (66 lb) in baggage compartment

21. Wheels and Tyres

Main Wheel Tyre Size — STOMIL 500 x 200 mm (19.7 x 7.9 in)

Tail Wheel Tyre Size — STOMIL 255 x 110 mm (10.0 x 4.3 in)

22. Glider and banner towing

Minimum towing speed (IAS):

gliders	δ_{KL} = 21°	110 km/h (59 kts)
	δ_{KL} = 0°	125 km/h (67 kts)
banner	δ_{KL} = 0°	125 km/h (67 kts)

Maximum towing speed (IAS), δ_{KL} = 0° — 165 km/h (89 kts)

Maximum take-off and landing mass of the airplane — 1400 kg (3086 lb)

Maximum total mass of airplane + glider system — 1890 kg (4167 lb)

Maximum number of gliders towed — 2

Maximum number of persons aboard — 2 (on front seats)

Safety link between the rope and the towing hook with the breaking force not more than — 9320 N (950 kg) (2094 lb)

D.IV. Operating and Service Instructions

1. Flight Manual	Airplane Flight Manual for PZL-104 MF Wilga 2000, Date of issue: April, 2001; (or latest approved revision)
2. Maintenance Manual	PZL-104 MF Wilga 2000 Airplane Maintenance Manual, Date of issue: April 23, 2001; (or latest approved revision)
3. Structural Repair Manual	Repair Manual for PZL-104M/MN/MF/MA Wilga 2000 Aircraft Date of issue: 1999; (or latest approved revision)
4. Weight and Balance Manual	See Airplane Flight Manual, Section 6
5. Illustrated Parts Catalogue	PZL-104M/MN/MF Wilga 2000 Catalogue of Spare Parts Date of issue: 1999; (or latest approved revision)

D.V. Notes

Note 1.

A current Weight and Balance Report must be provided with each airplane at the time of original Airworthiness Certification and at all times thereafter.

The airplane Weight and Balance Report must include:

- weight of the empty airplane,
- position of C.G.,
- unusable fuel quantity in empty weight,
- full oil quantity in empty weight,
- list of equipment in empty weight.

Note 2.

Operation of the PZL-104MF WILGA 2000 airplane at maximum take-off and landing mass of 1500 kg (3307 lb) is approved, providing Technical Bulletin No. 104MF04012 has been implemented. Operation will be in accordance with Supplement No. 8 of Airplane Flight Manual.

Note 3.

The type Certificate BB-130 together with this Data Sheet is valid for PZL-104 MF WILGA 2000 airplanes serial No. 00960001 and up. The certification process has been run on the airplane serial No. 00980008.

Note 4.

Approved Noise Levels in accordance with ICAO Annex 16, Volume 1, Chapter 10:

Maximum Takeoff Mass	1400 kg	Propeller HC-C3YR-1RF/F8068	85.9 ± 0.57dB(A)
		HC-C3YR-1RF/F8468A-6R	87.3 ± 0.51 dB(A)
Maximum Takeoff Mass	1500 kg	Propeller HC-C3YR-1RF/F8068	87.2 ± 0.74dB(A)

Note 5.

Currently: Airbus Poland S.A.

SECTION E: PZL-104MA WILGA 2000

E.I. General

1. Type/ Model	PZL-104 Wilga
1.1 Type	PZL-104MA Wilga 2000
1.2 Model	
2. Airworthiness Category	Normal
3. Manufacturer	EADS PZL „Warszawa-Okęcie" S.A. Al. Krakowska 110/114 02-256 Warszawa Poland See note 4
4. Type Certification Application Date	February 6, 2004
5. State of Design Authority	Poland
6. State of Design Authority Type Certificate Date	October 25, 2005
7. EASA Type Certification Date	November 16, 2005 (TC No. BB-130)

E.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements	February 6, 2004
2. Airworthiness Requirements	

FAR 23 dated February 1, 1965 as amended through Amendment 23-20 effective September 1, 1977;

FAR 23 Subpart B as amended through Amendment 23-45 effective September 7, 1993;

FAR 23 Subpart E & F as amended through Amendment 23-30 effective March 29, 1984;

FAR 23 Appendix F as amended through Amendment 23-34 effective January 15, 1987;

FAR 23 Appendix G as amended through Amendment 23-34 effective January 15, 1987;

FAR 36 dated December 1, 1969 as amended through Amendment 36-22 effective October 13, 1999;

3. Special Conditions	BCAR, Section K, Chapter K4-10 issued 10th April, 1974 - as far as glider and banner towing is concerned
4. Exemptions	None
5. Deviations	None
6. Equivalent Safety Findings	None
7. Environmental Protection	ICAO, Annex 16, Volume 1, Chapter 10; Edition 1993

E.III. Technical Characteristics and Operational Limitations

1. Type Design Definition — Master Drawings List of PZL-104MA Wilga 2000 Airplane, Issue 1, September 30, 2005

2. Description — Single radial engine, fixed landing gear with tail wheel, four-seat cantilever high-wing, all metal monoplane

3. Equipment — Master Equipment List of the PZL-104MA WILGA 2000 Airplane, Issue 1, September 30, 2005
Refer also to Airplane Flight Manual

4. Dimensions

Span	11.28 m (37 ft 0.1 in)
Length	8.62 m (28 ft 3.37 in)
Height	2.58 m (8 ft 5.6 in)
Wing Area	15.5 m² (166.8 sq ft)

5. Engine

5.1. Model — LYCOMING IO-540 K1B5
LYCOMING IO-540 K1D5

5.2 Type Certificate — 1E4 – issued by FAA

5.3 Limitations

Maximum take-off and continuous rating	216.3 kW (294.1 metric HP) (290 HP)
Maximum engine speed for take-off and continuous rating	2575 rpm

For other engine limits refer to AFM

6. Load factors

Maximum permissible load factor in flight with maximum mass of 1500 kg:

	Flaps up	Flaps down
Max. positive load factor	3.8	2.0
Max. negative load factor	-1.52	0

7. Propeller

7.1 Model — HARTZELL HC-E3YR-1RF/F8068 +2
constant speed

7.2 Type Certificate — P33EA – issued by FAA

7.3 Number of blades — 3

7.4 Diameter

Maximum diameter	2133.6 mm (84 in)
Minimum diameter allowed for repairs	2032 mm (80 in)

8. Fluids

8.1 Fuel 100/100LL minimum grade aviation gasoline

8.2 Oil

Outside Temperature	MIL-L-6082B Spec. Mineral Grades	MIL-L-22851 Spec. Ashless Dispersant Grades
full range of temperatures		SAE 15W50 or 20W50
above +27°C (80°F)	SAE 60	SAE 60
above +16°C (60°F)	SAE 50	SAE 40 or SAE 50
-1° to 32°C (30° to 90°F)	SAE 40	SAE 40
-18° to 21°C (0° to 70°F)	SAE 30	SAE 30, 40, 20W40
below -12°C (10° F)	SAE 20	SAE 30 , 20W30

9. Fluid capacities

9.1 Fuel 392 l (103.6 US Gallons)
380 l (100.4 US Gallons) usable

9.2 Oil 11.4 l (12 U.S. qt) (integrated with engine)

10. Air Speeds (CAS)

Never exceed speed - V_{NE}	243 km/h (131 kts)
Normal operating speed - V_{NO}	208 km/h (112 kts)
Manoeuvring speed - V_A	192 km/h (104 kts)
Flaps extended speed - V_{FE}	162 km/h (87 kts)
Stalling speed - V_{SO}	89 km/h (48 kts)

11. Maximum Operating Altitude Not defined

12. Approved Operations Capability Day/Night-VFR/IFR
Flight into known icing conditions – prohibited

13. Maximum Masses

Take-off & Landing:	1500 kg (3307 lb)
Zero fuel	1427 kg (3146 lb)
Minimum in flight	1078 kg (2377 lb)

14. Centre of Gravity Range

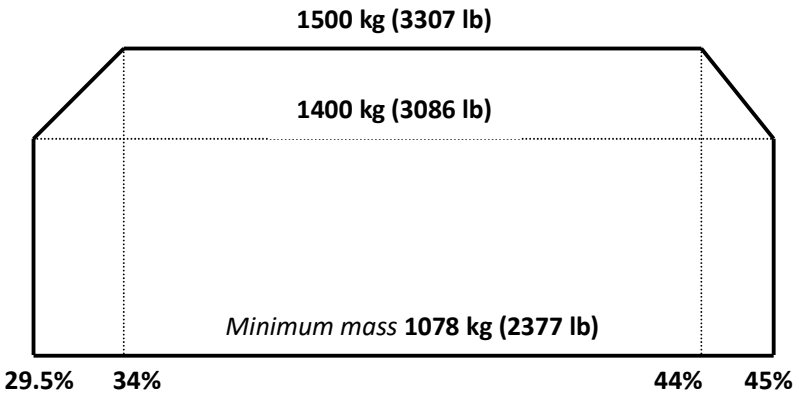
Minimum front centre of gravity location:

Q = 1500 kg (3307 lb)	34.0 % MAC - 0.476 m (18.74 in) aft of datum
Q ≤ 1400 kg (3086 lb)	29.5 % MAC - 0.413 m (16.3 in) aft of datum
	linear variation between these points

Maximum rear centre of gravity location:

Q = 1500 kg (3307 lb)	44.0 % MAC - 0.616 m (24.25 in) aft of datum
Q ≤ 1400 kg (3086 lb)	45.0 % MAC - 0.630 m (24.8 in) aft of datum
	linear variation between these points

MAC	1.4 m (55.1 in)
Position of leading edge of MAC aft of datum	0.0 m (0.0 in)



15. Datum — A plane tangent to the leading edge of the wing slat and perpendicular to the mean aerodynamic chord (MCA)

16. Control surface deflections

		Displacement value
Rudder displacement:		
	Left	22±1°
	Right	22±1°
Elevator displacement:		
	Up	38±1°
	Down	18±2°
Trimming tab displacement:		
	Up	20±2°
	Down	20±2°
Aileron displacement:		
	Up	26±2°
	Down	16±2°
Flap displacement:		
	for take-off	21±2°
	for landing	44±2°

17. Levelling Means	According to rigging points, elevation of point 6 over point 5: 680 mm (26.8 in) (refer to AFM, Sect. 6.1.)
18. Minimum Flight Crew	1 (Pilot)
19. Maximum Passenger Seating Capacity	3
20. Baggage/ Cargo Compartments	
Max. allowable Load:	30 kg (66 lb) in baggage compartment
21. Wheels and Tyres	
Main Wheel	CLEVELAND 40-75D
Main Wheel Tyre Size	GOODYEAR 8.00-6TT 486 x 191 mm (19.1 x 7.5 in)
Tail Wheel Tyre Size	STOMIL 255 x 110 mm (10.0 x 4.3 in)

22. Glider and banner towing

	IAS	CAS
Minimum towing speed		
gliders δ_{KL} = 21°	110 km/h (59 kts)	108 km/h (58 kts)
δ_{KL} = 0°	125 km/h (67 kts)	124 km/h (67 kts)
Maximum towing speed (IAS), δ_{KL} = 0°	165 km/h (89 kts)	167 km/h (90 kts)
Maximum take-off and landing mass of the airplane	1400 kg (3086 lb)	
Maximum total mass of airplane + glider system	1890 kg (4167 lb)	
Maximum number of gliders towed	2	
Maximum number of persons aboard	2 (on front seats)	
Safety link between the rope and the towing hook with the breaking force not more than	9320 N (950 kg) (2094 lb)	

E.IV. Operating and Service Instructions

1. Flight Manual	Airplane Flight Manual for PZL-104 MA Wilga 2000, Date of issue: August, 2005; (or latest approved revision)
2. Maintenance Manual	PZL-104 MA Wilga 2000 Airplane Maintenance Manual, Date of issue: July 22, 2005; (or latest approved revision)
3. Structural Repair Manual	Repair Manual for the PZL-104M/MN/MA Wilga 2000 Aircraft Date of issue: 1999; (or latest approved revision)
4. Weight and Balance Manual	See Airplane Flight Manual, Section 6
5. Illustrated Parts Catalogue	PZL-104MA Wilga 2000 Catalogue of Spare Parts Date of issue: 2006; (or latest approved revision)

E.V. Notes

Note 1.

A current Weight and Balance Report must be provided with each airplane at the time of original Airworthiness Certification and at all times thereafter.
The airplane Weight and Balance Report must include:

- weight of the empty airplane,
- position of C.G.,
- unusable fuel quantity in empty weight,
- full oil quantity in empty weight,
- list of equipment in empty weight,

Note 2.

The type Certificate BB-130 together with this Data Sheet is valid for PZL-104 MA WILGA 2000 airplanes serial No. 00050019, 00050021 and up. The certification process has been run on the airplane serial No. 00050019.

Note 3.

Approved Noise Level in accordance with ICAO Annex 16, Volume 1, Chapter 10: 84.6 ± 0.26 dB(A)

Note 4.

Currently: Airbus Poland S.A.

SECTION F: PZL-104 WILGA 32, PZL-104 WILGA 32A

F.I. General

1. Type/ Model	
1.1 Type	PZL-104 Wilga
1.2 Model	PZL-104 Wilga 32, PZL-104 Wilga 32A – aeroclub, for glider towing and parachute jumper lifting See: Note 3
2. Airworthiness Category	Normal
3. Manufacturer	WSK „Warszawa-Okęcie” Al. Krakowska 110/114 02-256 Warszawa Poland See note 4
4. Type Certification Application Date	October 11, 1967
5. State of Design Authority	Poland
6. State of Design Authority Type Certificate Date	March 31, 1969
7. EASA Type Certification Date	January 8, 2007 (TC No. BB-55)

F.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements	October 11, 1967
2. Airworthiness Requirements	BCAR, Section D, 1959
3. Special Conditions	None
4. Exemptions	None
5. Deviations	None
6. Equivalent Safety Findings	None
7. Environmental Protection	None

F.III. Technical Characteristics and Operational Limitations

1. Type Design Definition	Drawings No. 32.900.000 Universal plane, 32.910.000 Basic aircraft
2. Description	Single radial engine, fixed landing gear with tail wheel, four-seat cantilever high-wing, all metal monoplane
3. Equipment	Refer to Flight Manual for the PZL-104 Wilga 32 aircraft, see also TCDS No. BB-55, issued March 1969
4. Dimensions	
Span	11.12 m (36 ft 5.8 in)
Length	8.16 m (26 ft 9.2 in)
Height	2.51 m (8 ft 2.8 in)
Wing Area	15.57 m² (167.6 sq ft)
MAC	1.4 m (4 ft 7.1 in)
5. Engine	
5.1. Model	Continental 0-470L Continental 0-470R
5.2 Type Certificate	E-273 – issued by FAA
5.3 Limitations	
Maximum take-off and continuous rating	171.5 kW (233.2 metric HP) (230 BHP)
Max allowable rotational speed for all operations	2600 rpm
For other engine limits refer to AFM	
6. Load factors	
Max. positive load factor	3.5
Max. negative load factor	-1.5
7. Propeller	
7.1 Model	McCauley 2A-34C-50/90A2 hydraulically controlled constant speed
7.2 Type Certificate	P3EA – issued by FAA
7.3 Number of blades	2
7.4 Diameter	2200 mm (86.6 in)
8. Fluids	
8.1 Fuel	Aviation gasoline, 80/87 minimum grade
8.2 Oil	Aero Shell W100 or equivalents

9. Fluid capacities

9.1 Fuel	Overall 190 l (140 kg) (50.2 US Gal) in two tanks in wings
9.2 Oil	13.5 l (11 kg) (14.3 US qt) in an integral engine tank

10. Air Speeds

Never exceed speed V_{NE}:	279 km/h (151 kts)
Normal operating speed V_{NO} :	228 km/h (123 kts)
Manoeuvring speed V_A:	160 km/h (86 kts)
Flaps extended speed V_{FE}:	130 km/h (70 kts)
	For air speed limits and other limitations for glider towing and parachute jumper lifting – see Flight Manual for the PZL-104 Wilga 32 aircraft

11. Maximum Operating Altitude — Not defined

12. Approved Operations Capability — VFR (standard) and IFR (with navigation equipment on special request) flights

13. Maximum Masses

Take-off & Landing	1230 kg (2712 lb)
For glider towing:	
Permissible number of gliders in tow	3
Overall mass of towed gliders	not exceeding 1125 kg (2481 lb)
Permissible mass of single glider	650 kg (1433 lb)

14. Centre of Gravity Range

Forward limit:	26% MAC, i.e. 0.364 m (14.3 in) aft of datum
Rear limit:	44% MAC, i.e. 0.616 m (24.3 in) aft of datum

15. Datum — A plane tangent to the leading edge of the wing slat and perpendicular to the mean aerodynamic chord (MAC)

16. Control surface deflections

		Displacement value
Rudder displacement:		
	Left	30±4°
	Right	30±4°
Elevator displacement:		
	Up	44±4°
	Down	18±4°
Trimming tab displacement:		
	Up	30±2°
	Down	30±2°
Aileron displacement:		
	Up	28.5±3°
	Down	18±3°
Max. flap displacement:		44°

17. Levelling Means — MAC positioned horizontally

18. Minimum Flight Crew — 1 (Pilot)

19. Maximum Passenger Seating Capacity — 3

20. Baggage/ Cargo Compartments

Max. allowable Load: — 35 kg (77 lb) in baggage compartment

21. Wheels and Tyres

Main Wheel Tyre Size — 500 x 200 mm (19.7 x 7.9 in)

Tail Wheel Tyre Size — 255 x 110 mm (10.0 x 4.3 in)

22. (Reserved)

F.IV. Operating and Service Instructions

1. Flight Manual	Flight Manual for the PZL-104 Wilga 32 aircraft, Issued March 1968; (or latest approved revision)
2. Maintenance Manual	Service and Maintenance Instruction of the PZL-104 Wilga 32 aircraft, Issued 1968; Scheduled Inspection and Maintenance Requirements for the PZL-104 Wilga 32 aircraft, Issued 1968; Technical Description of the PZL-104 Wilga 32 aircraft, Issued 1968 (or latest approved revision)

F.V. Notes

Note 1.

For airspeed limits with gliders in tow and with door removed for parachute jumps, and other limitations – see Flight Manual for the PZL-104 Wilga 32 aircraft.

Note 2.

Permissible crew number, baggage and fuel amount depend on loading version – see Flight Manual for the PZL-104 Wilga 32 aircraft.

Note 3.

Variant PZL-104 Wilga 32A differs from variant PZL-104 Wilga 32 only by installation of towing hook and wider step. All instructions and other documents applicable to PZL-104 Wilga 32 are valid for variant PZL-104 Wilga 32A.

Note 4.

Currently: Airbus Poland S.A.

SECTION G: PZL-104 WILGA 35, PZL-104 WILGA 35A

G.I. General

1. Type/ Model	
1.1 Type	PZL-104 Wilga
1.2 Model	PZL-104 Wilga 35, PZL-104 Wilga 35A – aeroclub, for glider towing and parachute jumper lifting See: Note.6
2. Airworthiness Category	Normal
3. Manufacturer	PZL „Warszawa-Okęcie” Al. Krakowska 110/114 02-256 Warszawa Poland See note 8
4. Type Certification Application Date	October 11, 1967
5. State of Design Authority	Poland
6. State of Design Authority Type Certificate Date	March 31, 1969
7. EASA Type Certification Date	January 8, 2007 (TC No. BB-55)

G.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements	October 11, 1967
2. Airworthiness Requirements	BCAR, Section D, 1959
3. Special Conditions	None
4. Exemptions	None
5. Deviations	None
6. Equivalent Safety Findings	None
7. Environmental Protection	ICAO Annex 16,Volume 1, Chapter 6; Edition 1978 See: Note 4

G.III. Technical Characteristics and Operational Limitations

1. Type Design Definition	Drawings No.: 35.900.000 Universal plane, 35.910.000 Basic aircraft
2. Description	Single radial engine, fixed landing gear with tail wheel, four-seat cantilever high-wing, all metal monoplane
3. Equipment	35.W-02 “List of equipment installed on the aircraft”, Edition 2 of August 27, 1960 and Edition B of Nov. 11, 1983. Refer also to Flight Manual for the PZL-104 Wilga 35 aircraft; see also TCDS No. BB-55, issued March 1969
4. Dimensions	
Span	11.12 m (36 ft 5.8 in)
Length	8.10 m (26 ft 6.8 in)
Height	2.94 m (9 ft 7.7 in)
Wing Area	15.57 m² (167.6 sq ft)
MAC	1.4 m (4 ft 7.1 in)
5. Engine	
5.1. Model	AI-14 RA
5.2 Type Certificate	CB-052 - issued by CAA in Poland
5.3 Limitations	
Maximum take-off rating (5 minutes)	193.9 kW (263.6 metric HP) (260 BHP)
Maximum continuous rating	164.1 kW (223.1 metric HP) (220 BHP)
Maximum engine speed for take-off rating	2350 rpm at sea level
Maximum engine speed for continuous rating	2050 rpm
For other engine limits refer to AFM	
6. Load factors	
Max. positive load factor	3.5
Max. negative load factor	-1.5
7. Propeller	
7.1 Model	US 122 000 hydraulically controlled, constant speed
7.2 Type Certificate	DB-118 - issued by CAA in Poland
7.3 Number of blades	2
7.4 Diameter	2650 mm (104.3 in)

8. Fluids

8.1 Fuel	B70 aviation gasoline
8.2 Oil	MS20 or MK22 acc. to GOST 1013-49, Aero Shell W100 or equivalents

9. Fluid capacities

9.1 Fuel	Overall 190 l (140 kg) (50.2 US Gal) in two tanks in wings Additionally 90 l (65 kg) in an extra fuel tank installed in a place of rear seats – See: Note 5
9.2 Oil	16 l (13 kg) (16.9 U.S. qt) in tank on fire-wall

10. Air Speeds

Never exceed speed V_{NE}:	279 km/h (151 kts)
Normal operating speed V_{NO}:	228 km/h (123 kts)
Manoeuvring speed V_A:	160 km/h (86 kts)
Flaps extended speed V_{FE}:	130 km/h (70 kts)
	For airspeed limits and other limitations for version for glider towing and parachute jumper lifting – see Flight Manual for the PZL-104 Wilga 35A aircraft

11. Maximum Operating Altitude — Not defined

12. Approved Operations Capability — VFR (standard) and IFR (with navigation equipment on special request) flights

13. Maximum Masses

Take-off & Landing	1230 kg (2712 lb) 1300 kg (2866 lb) (for A/C SN from 85218)

14. Centre of Gravity Range

Forward limit:	24.2 % MAC, i.e. 0.339 m (13.35 in) aft of datum
Rear limit:	44.0 % MAC, i.e. 0.616 m (24.3 in) aft of datum

15. Datum — A plane tangent to the leading edge of the wing slat and perpendicular to the mean aerodynamic chord (MCA)

16. Control surface deflections

		Displacement value
Rudder displacement:		
	Left	26±2°
	Right	26±2°
Elevator displacement:		
	Up	38±1°
	Down	18±2°
Trimming tab displacement:		
	Up	30±2°
	Down	30±2°
Aileron displacement:		
	Up	26±2°
	Down	16±2°
Max. flap displacement:		44°

17. Levelling Means — MAC positioned horizontally

18. Minimum Flight Crew — 1 (Pilot)

19. Maximum Passenger Seating Capacity — 3 standard
1 for a version for prolonged cruise

Version for parachute jumpers lifting
Maximum Passenger Seating Capacity: 4 – See: Note 7

20. Baggage/ Cargo Compartments
Max. allowable Load: 35 kg (77.2 lb) in baggage compartment

21. Wheels and Tyres
Main Wheel Tyre Size 500 x 200 mm (19.7 x 7.9 in)
Tail Wheel Tyre Size 255 x 110 mm (10.0 x 4.3 in)

22. (Reserved)

G.IV. Operating and Service Instructions See: Note 6

1. Flight Manual	Flight Manual for the PZL-104 Wilga 35A aircraft, Issued 1981; valid for A/C SN from 48031 - 74217; (or latest approved revision)
	Flight Manual for the PZL-104 Wilga 35A aircraft, Issue A, 1976; valid for A/C SN from 85218; (or latest approved revision)
2. Maintenance Manual	Maintenance Instruction and Scheduled Inspection for the PZL-104 Wilga 35A Aircraft, Issued 1981; valid for A/C SN from 48031 - 74217; (or latest approved revision)
	Maintenance Instruction and Scheduled Inspection for the PZL-104 Wilga 35 Aircraft, Issue B, 1975; valid for A/C SN from 85218; (or latest approved revision)
	Maintenance Instruction and Scheduled Inspection for the PZL-104 Wilga 35A Aircraft, Issue C, 1982; valid for A/C SN from 16820629; (or latest approved revision)
	Technical Description of the PZL-104 Wilga35A Aircraft Issue D, 1982; (or latest approved revision)
3. Structural Repair Manual	Repair Manual for the PZL-104 Wilga 35 Aircraft, Issued 1979; (or latest approved revision)
4. Weight and Balance Manual	See Airplane Flight Manual, Section 2.6
5. Illustrated Parts Catalogue	PZL-104 Wilga 35 Catalogue of Spare Parts, Issue D, 1993; (or latest approved revision)

G.V. Notes

Note 1.

For airspeed limits with gliders in tow and with door removed for parachute jumps, and other limitations - see Flight Manual for the PZL-104 Wilga 35A aircraft. See: Note 6.

Note 2.

Permissible crew number, baggage and fuel amount depend on loading version - see Flight Manual for the PZL-104 Wilga35 aircraft.

Note 3.

For glider towing:

Permissible number of gliders in tow	3
Overall weight of towed gliders	not exceeding 1125 kg (2481 lb)
Permissible weight of single glider	650 kg (1433 lb)

Note 4.

Approved Noise Level in accordance with ICAO Annex 16,Volume 1, Chapter 6; Edition 1978:
63.0 dB(A)

Note 5.

For prolonged cruise the additional fuel tank could be installed instead of rear seats - see: Supplement No. 2 to the airplane's AFM.

Note 6.

Variant PZL-104 Wilga 35A differs from variant PZL-104 Wilga 35 only by installation of towing hook and wider step. After 1979 only PZL-104Wilga 35A variant was manufactured. Instructions and other documents edited before 1979 assigned to PZL-104 Wilga 35 considering later revisions are valid for variant PZL-104 Wilga 35A.

Note 7.

Valid for airplanes up to XV Series (S/N 15 XX XXX) inclusive.

Note 8.

Currently: Airbus Poland S.A.

SECTION ADMINISTRATIVE

I. Acronyms & Abbreviations

AFM - Aeroplane Flight Manual
FAA - Federal Aviation Administration
VFR - Visual Flight Rules
IFR – Instrumental Flight Rules
CAS – Calibrated Air Speed
IAS – Indicated Air Speed
rpm - revolutions per minute

II. Type Certificate Holder Record

Airbus Poland S.A.
Al. Krakowska 110/114
02-256 Warszawa
Poland

III. Change Record

Issue	Date	Changes	TC Issue No. & Date
Issue 01	16 November 2005	Initial Issue	Initial Issue, 16 November 2005
Issue 02	08 January 2007	Adding the following aircraft models: PZL-104 Wilga 32, 32A, 35, 35A.	Issue 02, 08 January 2007
Issue 03	17 October 2008	Editorial refinement and corrections to flight and maintenance manual references, titles and dates.	Issue 03, 08 January 2007
Issue 04	23 August 2019	Change of TC holder name from PZL “Warszawa - Okęcie” S.A. to Airbus Poland S.A.	Issue 04, 23 August 2019
Issue 05	25 August 2022	PZL-104 Wilga 80, reg. ZS-NPU, SN: CF 20900891 has been removed from TCDS EASA.A.061 (see Note 4.)	Issue 05, 22 August 2022

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