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A: PZL-106 BT-601 TURBO KRUK

A.I. General

Data Sheet No.: EASA.A.444	Issue: 01	Date: 13 April 2007
1. a) Type: b) Variant:	PZL-106 TURBO KRUK PZL-106 BT-601 TURBO KRUK for a/c SN 11960249 and up	
2. Airworthiness Category:	Restricted (<i>FAR 21.25</i>)	
3. Type Certificate Holder:	EADS PZL "Warszawa-Okęcie" S.A. Al. Krakowska 110/114 00-971 WARSAW POLAND	
4. Manufacturer:	EADS PZL "Warszawa-Okęcie" S.A. Al. Krakowska 110/114 00-971 WARSAW POLAND See: Note 8	
5. Certification Application Date:	07.01.1991	
6. GICA/CAIB Certification Date:	17.03.1994	
7. EASA Certification Date:	13 April 2007	
8. This TCDS replaces CAO Poland TCDS BB-195 with all the revisions		

A.II. Certification Basis

1. Reference Date for determining the applicable requirements:	See A.II.5.
2. (Reserved)	
3. (Reserved)	
4. Certification Basis:	As defined below
5. Airworthiness Requirements:	FAR 21.25 (restricted category) FAR 23, Effective February 01, 1965, including Amdt. 23-1 through Amdt. 23-37, effective August 18, 1990), except following points: 23.221 (a) 23.629 (f)(1) 23.677 (a) 23.781 (a) 23.951 (b) 23.979 (b), (c) 23.1303 (e)(1) 23.1321 (d) 23.1353 (g)(1) 23.1357 (c) 23.1383 (a) 23.1385 (a) 23.1389 (b) 23.1391 23.1393 23.1395 FAR 34.11 (with ability of the optional installation) CAA UK Airworthiness Note N ^o . 90, Issue 1, April 01, 1983 (as on equivalent level of security).
6. Requirements elected to comply:	None

7. EASA Special Conditions:	None
8. EASA Exemptions:	None
9. EASA Equivalent Safety Findings:	None
10. EASA Environmental Standards:	N.A. (agricultural aircraft)

A.III. Technical Characteristics and Operational Limitations

1. Type Design Definition:	Document N ^o . OKBT/F-00-00: List of records mentioned in "Compliance Cards with FAR 23 Regulations", Chapter 4 "List of constructional documentation"; Edition December 1990
2. Description:	Land, single engine, turboprop agricultural airplane of metal structure, low wing braced monoplane, fixed landing gear with tail wheel.
3. Equipment:	List of aggregates and instruments of the PZL-106 BT-601 Aircraft, Edition 1, March 1994
4. Dimensions:	
Span	15.00 m [49 ft 2.5 in]
Length	10.34 m [33 ft 11 in]
Height [in flight position]	5.42 m [17 ft 9.4 in]
Wing Area	31.69 m ² [341.11 sq.ft]
5. Engine:	WALTER M601D-1 turboprop, two shaft with free turbine and reverse flow of air and combustion gas See: Note 1
5.1 Engine Limits:	
Maximum R.P.M. for take-off and continuous rating	2080 R.P.M. For other engine limits refer to AFM
6. (Reserved)	
7. Propeller:	V508D-AG/99/A/A three-blade, constant speed See: Note 2 Maximum diameter 2500 mm [70 in] For other propeller limits refer to AFM
8. Fluids:	
8.1 Fuel:	T-1, RT acc. to ST SEV 5024-85 or GOST 10227-86 TS-1 acc. to CSN 65 6520 or ST SEV 5024-85 or GOST 10227-86 JET A, JET A1 acc. to ASTM D 1655-83 or DERD 2494 PSM-2 acc. to PN-86/96026 PL-6 acc. to PND 25005-76 PL-7 acc. to PND 25 005-92 It is allowed to mix above mentioned fuels.
8.2 Oil:	Syntetic B 3V acc. to TU38-101295-72 Aero Shell Turbine Oil 500 acc. to MIL-L-23699C Aero Shell Turbine Oil 555 acc. to MIL-L-23699C Aero Shell Turbine Oil 560 acc. to MIL-L-23699C Mobil Jet Oil II acc. to MIL-L-23699C BP Turbo Oil 2380 Castrol 599

Note: It is prohibited to mix the B 3V oil with AEROSHELL or MOBIL JET oils.

9. Fluid capacities:

9.1 Fuel:

full capacity	560 l [147.96 US gal.]
usable fuel	min. 490 l [129.47 US gal.]
unusable fuel	70 l [18.49 US gal.]

It is possible to use the hopper as an additional fuel tank
See: Note 7

9.2 Oil:

7 l [7.40 US qts] (integrated with engine)

10. Air Speeds:

	For weights:	3000 kg (6614 lb)	3500 kg (7716 lb)
Maneuvering - V_A		194 km/h [121 m.p.h.]	194 km/h [121 m.p.h.]
Maximum operating - V_{MO}		215 km/h [134 m.p.h.]	194 km/h [121 m.p.h.]
Maximum for agricultural operations		180 km/h [112 m.p.h.]	180 km/h [112 m.p.h.]
Maximum for firefighting operations		194 km/h [121 m.p.h.]	194 km/h [121 m.p.h.]
Flap extended - V_{FE}		170 km/h [106 m.p.h.]	170 km/h [106 m.p.h.]
Stalling - V_{SO} :		97 km/h [60 m.p.h.]	111 km/h [69 m.p.h.]

11. Maximum Operating Altitude:

4267 m [14 000 feet]
Above 3810 m [12 500 feet] airborne time amounts max.
30 min.

12. All Weather Capability:

VFR day
Flight into icing conditions - prohibited.

13. Maximum Masses:

	Take-off	Landing
	3500 Kg [7716 lb]	3000 Kg [6614 lb]
Maximum chemicals weight	1500 Kg [3307 lb]	

14. Center of Gravity Range:

Take-off

Forward limit:
0.497 m [19.57 in] aft of datum [23 % M.A.C.]
Rear limit at 3000 – 3500 kg [6614 - 7716 lb]:
0.752 m [29.61 in] aft of datum [35 % M.A.C.]
Straight line variation between points given

Landing

Forward limit:
0.497 m [19.57 in] aft of datum [23 % M.A.C.]
Rear limit at 3000 kg [6614 lb]:
0.791 m [31.14 in] aft of datum [37 % M.A.C.]
Rear limit at 2885 kg [6360 lb]
0.864 m [34.01 in] aft of datum [40 % MAC]
Straight line variation between points given

15. Datum:

Plane perpendicular to M.A.C. pointing into leading edge of
M.A.C.
M.A.C. length 2160 mm [85.04 in]

16. (Reserved)

17. Leveling Means:	Airplane flight alignment: the leveling point "6" 409 mm above the leveling point "14"
	Airplane position for weighting: the leveling point "6" 1097 mm above the leveling point "14"
	(Markings of leveling points acc. To leveling sheet of airplane)
18. Minimum Flight Crew:	1 (Pilot)
19. Maximum Passenger Seating Capacity:	1 (for mechanic, for ferry flights only)
20. (Reserved)	
21. Baggage	See: Note 5 e)
22. Wheels and Tyres	
Main Wheel Tyre Size	800x260 mm
Nose Wheel Tyre Size	350x135 mm

A.IV. Operating and Service Instructions

Aeroplane Flight Manual (AFM)	Airplane Flight Manual of the PZL-106 BT-601 TURBO KRUK Airplane Issued Jan. 26, 1996; Rev. 11 as per January 31, 2005
Aeroplane Maintenance Manual (AMM)	Maintenance Manual of the PZL-106 BT-601 TURBO KRUK Airplane Issued 1996, Rev. 11 as per January 31, 2005
Service Information and Service Bulletins	S. Bull. N ^o V508D/2a of AVIA-HAMILTON STANDARD AVIATION (present name AVIA PROPELLER LTD.)

A.V. Notes

Note 1.

Engines manufactured before April 01, 1993 could be designated as WALTER M601D(8).

Note 2.

Propeller designation V508D-AG/99/A/A was introduced by manufacturer of the propeller on April 9, 2002 instead of hitherto used propeller designation V508D-AG.
It is allowed to use the VJ8.508D propeller unit including V508D-AG propeller.
The aircraft may be equipped with VJ8.508D propeller unit including V508D/7 with serial number listed in the Service Bulletin N^o V508D/2a published by the propeller manufacturer AVIA-HAMILTON STANDARD AVIATION (present name AVIA PROPELLER LTD.). Operation of V508D-AG must be done within the limitations given in the said Bulletin.

Note 3.

Current weight and balance report, including list of equipment in certificated empty weight must be included with each aircraft provided with the airworthiness certificate. The empty aircraft and the corresponding centre of gravity location must include unusable fuel, i.e. 70 l [18.49 US gal.] and full oil (7 l) [7.40 U.S. qts].

Note 4.

All placards specified in the Airplane Flight Manual and in the Airplane Maintenance Manual, Chapter 11, must be displayed in the airplane.

Note 5. VARIOUS LIMITATIONS

- a. Take-off and landing as well are not permitted when indication difference of left and right fuel gauge is higher than 120 l [31.71 U.S. gal.].
- b. Air bleed from engine compressor, to clean the air filter, must not be switched on the take-off rating.
- c. Electro-pneumatic unit must not be switched on when the engine is stopped or when the engine is running with feathered propeller.
- d. Admissible number of passenger – 1 mechanic for ferry flights only.
- e. When the weight of airplane is higher than 3000 kg [6614 lb]
 Baggage space loading – prohibited
 Passenger service – prohibited
- f. It is prohibited to operate the airplane with the engine air inlet fairing, 906.69.885.00-0 removed:
 - at outside air temperature below 18 °C
 - in ferry flight
- g. In flight the power lever must not be reset beyond the idling limit stop (beyond the idling locking). Excessively deep reset can result in loss of the aircraft controllability or in the powerplant overspeed and further in the loss of the engine power.

Note 6.

Outside air temperature limits:

Minimum	- 20 °C
Maximum	+ 50 °C

Note 7.

If the chemicals hopper is used as the additional fuel tank, the Airplane Flight Manual for the PZL-106BT-601 TURBO KRUK together with Supplement N^o 1 "Airplane operated with additional fuel tank" must be adhered to.]

Note 8.

Formerly: PZL "Warszawa-Okęcie",
Wytwórnia Sprzętu Komunikacyjnego "PZL-Warszawa-Okęcie".

B: PZL-106 BTU-34 TURBO KRUK

B.I. General

Data Sheet No.: EASA.A.444	Issue: 01	Date: 13 April 2007
1. a) Type: b) Variant:	PZL-106 PZL-106 BTU-34 TURBO KRUK	
2. Airworthiness Category:	Restricted (FAR 21.25)	
3. Type Certificate Holder:	EADS PZL "Warszawa-Okęcie" S.A. Al. Krakowska 110/114 00-971 WARSAW POLAND	
4. Manufacturer:	EADS PZL "Warszawa-Okęcie" S.A. Al. Krakowska 110/114 00-971 WARSAW POLAND See: Note 8	
5. Certification Application Date:	January 21, 1997	
6. GICA/CAIB Certification Date:	November 02, 2000	
7. EASA Certification Date:	13 April 2007	
8. This TCDS replaces CAO Poland TCDS BB-195 with all the revisions		

B.II. Certification Basis

1. Reference Date for determining the applicable requirements:	See A.II.5.																				
2. (Reserved)																					
3. (Reserved)																					
4. Certification Basis:	As defined below																				
5. Airworthiness Requirements:	<ul style="list-style-type: none">- FAR 21.25 (Restricted Category) as amended through Amendment 21-69 effective September 16, 1991,- FAR 23, Effective February 01, 1965, including Amdt. 23-1 through Amdt. 23-37, effective August 18, 1990), except following points:<table><tr><td>23.221 (a)</td><td>23.1353 (g)(1)</td></tr><tr><td>23.629 (f)(1)</td><td>23.1385 (a)</td></tr><tr><td>23.677 (a)</td><td>23.1389 (b)</td></tr><tr><td>23.781 (a)</td><td>23.1391</td></tr><tr><td>23.951 (b)</td><td>23.1393</td></tr><tr><td>23.1303 (e)(1)</td><td>23.1395</td></tr></table>Equivalent level of safety was complied with for paragraphs:<table><tr><td>23.562</td><td>23.903(a)(2)</td></tr><tr><td>23.629(e)</td><td>23.951(c)</td></tr><tr><td>23.777(c)(3)</td><td>23.1093(b)</td></tr><tr><td>23.777(f)(1)</td><td>23.1337(b)</td></tr></table>- FAR 34.11 (only for overflow tank installed)- Airworthiness Notice No 90, Issue 1, 1 April 1983- The airplane is to be operated according to: Airworthiness Notice No 90, Issue 1, 1 April 1983	23.221 (a)	23.1353 (g)(1)	23.629 (f)(1)	23.1385 (a)	23.677 (a)	23.1389 (b)	23.781 (a)	23.1391	23.951 (b)	23.1393	23.1303 (e)(1)	23.1395	23.562	23.903(a)(2)	23.629(e)	23.951(c)	23.777(c)(3)	23.1093(b)	23.777(f)(1)	23.1337(b)
23.221 (a)	23.1353 (g)(1)																				
23.629 (f)(1)	23.1385 (a)																				
23.677 (a)	23.1389 (b)																				
23.781 (a)	23.1391																				
23.951 (b)	23.1393																				
23.1303 (e)(1)	23.1395																				
23.562	23.903(a)(2)																				
23.629(e)	23.951(c)																				
23.777(c)(3)	23.1093(b)																				
23.777(f)(1)	23.1337(b)																				
6. Requirements elected to comply:	None																				
7. EASA Special Conditions:	None																				

8. EASA Exemptions: None
9. EASA Equivalent Safety Findings: None
10. EASA Environmental Standards: N.A. (Agricultural Airplane)

B.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Master Drawings List of the PZL-106 BTU-34 TURBO KRUK Aircraft, Revision No. 0, February 17, 2000
2. Description: Land, single engined, turboprop agricultural airplane of metal structure, low wing braced monoplane, fixed landing gear with tail wheel.
3. Equipment: Master Equipment List of the PZL-106 BTU-34 TURBO KRUK Aircraft, Revision No. 0, February 17, 2000
Refer also to Airplane Flight Manual
4. Dimensions:
- Span 15.00 m [49 ft 2.5 in]
 - Length 10.34 m [33 ft 11 in]
 - Height in flight position 4.85 m [15 ft 9.9 in]
 - Wing Area 31.69 m² [341.11 sq. ft]
5. Engine: PT6A-34AG, acc. To Build Specification 970, turboprop, twin shaft, with free power turbine and reverse flow of air and combustion gases

5.1 Engine Limits:

Operating limitations	ENGINE OPERATING LIMITS									
	SHP (9*)	Torque (1*) [psig]	NOM ITT [°C]	Max. observed ITT [°C]	Gas generator Speed Np (2*) [min ⁻¹] %		Propeller Speed Np (1*) [min ⁻¹] %		Oil pressure (3*) [psig]	Oil temperature (4*) [°C]
Take-off and Max. Continuous/Enroute Emergency (5*)	750 ISA+16°C	64.5		790	38100	101.5	2200	100	85÷105	10÷99
Max. Climb	700 ISA+13.3°C	60.2	740	765	38100	101.5	2200	100	85÷105	0÷99
Max. Cruise	700 ISA+4.4°C	60.2		740	38100	101.5	2200	100	85÷105	0÷99
Idle (6*)				685 (6*)	19000 (6*)	51 (6*)			Min. +40	-40÷99
Starting			925	1090 (7*)						Min. -40
Acceleration		68.4		850 (7*)	38500 (7*)	102.6 (7*)	2420	110		0÷99
Max. Reverse	750	64.5 (8*)		790	38100	101.5	2100	95.5 (8*)	85÷105	0÷99

- (1*) Maximum permissible sustained torque is 64.5 psig. Np must be set so as not to exceed power limitations.
- (2*) For every 10°C [18°F] below -30°C [-22°F] ambient temperature, reduce maximum allowable Ng by 2.2%.
- (3*) Normal oil pressure is 85 to 105 psig at gas generator speed above 27000 rpm [72%] with oil temperature between 60 and 71°C [140 and 160°F]. Oil pressures below 85 psig are undesirable, and should be tolerated only for the completion of the flight, preferably at reduced power setting.
- (4*) For increased oil service life an oil temperature between 74 and 0°C [165 and 176°F] is recommended. A minimum oil temperature of 55°C [130°F] is recommended for fuel heater operation at take-off power.
- (5*) Maximum continuous rating is intended for emergency use at the decision of the pilot.
- (6*) At Ng=19000 rpm minimum advance power control lever as required to maintain ITT limit of 685°C.
- (7*) These values are time-limited to 2 seconds.
- (8*) Reverse power operation is limited to 1 minute.
- (9*) HP = Horse Power; 1 HP = 1.0139 KM.

For other engine limits refer to AFM

6. (Reserved)

7. Propeller: HARTZELL-PROPELLER INC, USA manufactured HC-B3TN-3D/T10282N+4 three-bladed, constant speed propeller with spinner D-3434-1P/
Diameter: maximum 2705 mm [106.5 in].
Pitch setting (at radius 0.762 m [30 in]):
at take-off +18⁰
at feather +87⁰
at reversal - 8⁰
Propeller speed limiter A 210507
For other propeller limits refer to AFM
8. Fluids:
8.1 Fuel: Permissible kinds of fuel in accordance with latest issue of "Engine Service Bulletin No. 1344" of engine manufacturer
8.2 Oil: Approver oils in accordance with latest issue of "Engine Service Bulletin No. 1001" of engine manufacturer.
9. Fluid capacities:
9.1 Fuel: Standard: 560 l [147.96 U.S. gal.]
Usable fuel 490 l [129.47 U.S. gal.]
Unusable fuel 70 l [18.49 U.S. gal.]
Optional: 1000 l [264.22 U.S. gal.]
Usable fuel 930 l [245.72 U.S. gal.]
Unusable fuel 70 l [18.49 U.S. gal.]
It is possible to use the hopper as an additional fuel tank
See: Note 6
9.2 Oil: 71 [7.4 U.S. qts] (oil tank is integral part of engine)
10. Air Speeds (CAS):
- | | For weights: | |
|-------------------------------------|-----------------------|-----------------------|
| | 3000 kg
(6614 lb) | 3500 kg
(7716 lb) |
| Maneuvering - V _A | 194 km/h [121 m.p.h.] | 194 km/h [121 m.p.h.] |
| Maximum operating - V _{MO} | 215 km/h [134 m.p.h.] | 194 km/h [121 m.p.h.] |
| Maximum for agricultural operations | 180 km/h [112 m.p.h.] | 180 km/h [112 m.p.h.] |
| Maximum for firefighting operations | 194 km/h [121 m.p.h.] | 194 km/h [121 m.p.h.] |
| Flap extended - V _{FE} | 170 km/h [106 m.p.h.] | 170 km/h [106 m.p.h.] |
| Stalling - V _{SO} : | 97 km/h [60 m.p.h] | 111 km/h [69 m.p.h.] |
11. Maximum Operating Altitude: 4267 m [14 000 feet]
Above 3810 m [12 500 feet] airborne time amounts max. 30 min.
12. All Weather Capability: VFR day
Flight into known icing conditions - prohibited.
13. Maximum Masses:
- | | Take-off | Landing |
|--|-------------------|-------------------|
| | 3500 Kg [7716 lb] | 3000 Kg [6614 lb] |
| Maximum chemicals weight (See: Note 7) | | 1500 Kg [3307 lb] |

14. Center of Gravity Range:

Take-off

Forward limit:

0.497 m [19.57 in] aft of datum [23 % M.A.C.]

Rear limit for weight above 3000 kg [6614 lb]:

0.752 m [29.61 in] aft of datum [35 % M.A.C.]

Rear limit for weight up to 3000 kg [6614 lb]:

0.864 m [34.01 in] aft of datum [40 % MAC]

Straight line variation between points given

Landing

Forward limit:

0.497 m [19.57 in] aft of datum [23 % M.A.C.]

Rear limit at 3000 kg [6614 lb]:

0.791 m [31.14 in] aft of datum [37 % M.A.C.]

Rear limit at 2885 kg [6360 lb]

0.864 m [34.01 in] aft of datum [40 % MAC]

Straight line variation between points given

15. Datum:

Plane perpendicular to M.A.C. pointing into leading edge of M.A.C.

M.A.C. length 2160 mm [85.04 in]

17. Leveling Means:

Airplane flight alignment: the leveling point "6" 409 mm
above the leveling point "14"

Airplane position for weighting: the leveling point "6" 1097 mm
above the leveling point "14"

(Markings of leveling points acc. To leveling sheet of airplane)

18. Minimum Flight Crew:

1 (Pilot)

19. Maximum Passenger Seating Capacity:

1 (for mechanic)

20. (Reserved)

21. Baggage

See: Note 4 e)

22. Wheels and Tyres

Main Wheel Tyre Size

800x260 mm

Nose Wheel Tyre Size

350x135 mm

B.IV. Operating and Service Instructions

Aeroplane Flight Manual (AFM)

Airplane Flight Manual of the PZL-106BTU-34 TURBO
KRUK Airplane
Date of issue: November 1999

Aeroplane Maintenance Manual (AMM)

PZL-106BTU-34 TURBO KRUK aircraft. Airplane
Maintenance Manual
Date of issue: December 20, 1999, Revision 1, July 07, 2001

Service Information and Service Bulletins

"Engine Service Bulletin No. 1344" of engine manufacturer
"Engine Service Bulletin No. 1001" of engine manufacturer

B.V. Notes

Note 1.

BS 970 (Build Specification) defines engine equipment.

Note 2.

Current weight and balance report, including list of equipment in certificated empty weight must be included with each aircraft provided with the airworthiness certificate. The empty aircraft and the corresponding center of gravity location must include unusable fuel, i.e. 70 l [18.49 US gal.] and full oil (7 l) [7.40 U.S. qts].

Note 3.

All placards specified in the Airplane Flight Manual and in the Airplane Maintenance Manual, Chapter 11, must be displayed in the airplane.

Note 4. VARIOUS LIMITATIONS

- a. Take-off and landing as well are not permitted when indication difference of left and right fuel gauge is higher than 120 l [31.71 U.S. gal.].
- b. Air bleed from engine compressor, to clean the air filter, must not be switched on the take-off rating.
- c. Electro-pneumatic unit must not be switched on when the engine is stopped or when the engine is running with feathered propeller.
- d. Admissible number of passenger – 1 mechanic for ferry flights only.
- e. When the weight of airplane is higher than 3000 kg [6614 lb]
 Baggage space loading – prohibited
 Passenger service – prohibited
- f. It is prohibited to operate the airplane with the engine air inlet fairing, 906.69.885.00-0 removed:
 - at outside air temperature below 18 °C
 - in ferry flight
- g. In flight the power lever must not be reset beyond the idling limit stop (beyond the idling locking). Excessively deep reset can result in loss of the aircraft controllability or in the powerplant overspeed and further in the loss of the engine power.

Note 5.

Outside air temperature limits:
 Minimum - 20 °C
 Maximum + 50 °C

Note 6.

If the chemicals hopper is used as the additional fuel tank, the Airplane Flight Manual for the PZL-106BTU-34 TURBO KRUK together with Supplement N^o 1 “Airplane operated with additional fuel tank” must be adhered to.

Note 7.

Chemical hopper capacity: hopper No. 106.81.300.00-0 1400 l [369.91 U.S. gal.]
 or hopper No. 906.81.300.00-0 1600 l [422.75 U.S. gal.]

Note 8.

Formerly: PZL “Warszawa-Okęcie”,
 Wytwórnia Sprzętu Komunikacyjnego “PZL-Warszawa-Okęcie”.

END