AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº EM-2009T06

Type Certificate Holder:

THIELERT AIRCRAFT ENGINES GmbH
Platanenstrasse 14
D-09350 Lichtenstein
GERMANY

EM-2009T06

Sheet 01

THIELERT

TAE 125-01
TAE 125-02-99
TAE 125-02-114

23 June 2009

Engines of models described herein conforming with this data sheet, which is part of Type Certificate No. 2009T06, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Brazilian Aeronautical Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other instructions.

I. GENERAL

MODELS TAE 125-01; TAE 125-02-99 and TAE 125-02-114

TYPE The TAE engines are liquid-cooled 4 cylinders, 4 stroke in-line diesel cycle engines with double overhead camshaft. It is equipped with common rail high pressure direct injection, turbocharger, gearbox with reduction ratio of 1:1.689, propeller governor and FADEC.

RATINGS	KW (Hp) at crankshaft rpm (Sea level pressure altitude)	TAE 125-01	TAE 125-02-99	TAE 125-02-114
	Takeoff and Max. Continuous	99 (132.8) at 3 900	99 (132.8) at 3 900	114 (152.6) at 3 900
	Max. Recommended Cruising and Max. Best Economy Cruising	71 (95) at 3 400	71 (95) at 3 400	97 (130) at 3 400

FLUIDS (FUEL / OIL / ADDITIVES) Refer to Operation & Maintenance Manual (See NOTES 11, 13 and 14)

OIL SUMP CAPACITY (in addition to the volume in the hosing and oil cooler), Liters (Gallon)

Maximum level	6.0 (1.59)	6.0 (1.59)	6.0 (1.59)
Minimum level	4.5 (1.19)	4.5 (1.19)	4.5 (1.19)
Total	6.0 (1.59)	6.0 (1.59)	6.0 (1.59)

PRINCIPAL DIMENSIONS	mm (in)			
	Length	816 (32.12)	816 (32.12)	816 (32.12)
	Width	778 (30.63)	778 (30.63)	778 (30.63)
	Height	636 (25.04)	636 (25.04)	636 (25.04)
CENTER OF GRAVITY	Refer to installation Manual	IM-02-01	IM-02-02	IM-02-02
WEIGHT (dry)	Kg (lb)	134 (295.4)	134 (295.4)	134 (295.4)
DISPLACEMENT	cm^3 (pol^3)	1,689 (103.1)	1,991 (121.5)	1,991 (121.5)
BORE	mm	80.0	83.0	83.0
STROKE	mm	84.0	92.0	92.0
COMPRESSION RATE		18:1	18:1	18:1

PROPELLER ROTATION		CCW	CCW	CCW
GEAR REDUCTION	Crankshaft to propeller	1.689:1	1.689:1	1.689:1
CONTROL SYSTEM	Full Authority Digital Engine Control (FADEC) (See NOTES 7, 8 and 9).	P/N 02-7610-55001R1	P/N 05-7610-K000101	P/N 05-7610-K000101

II. AIRWORTHINESS LIMITATIONS

ALTITUDE	m (ft)			
	Maximum altitude	5 640 (18 500)	5 640 (18 500)	5 640 (18 500)
	Critical altitude	1 830 (6 000)	1 830 (6 000)	1 830 (6 000)
MAXIMUM ENGINE OVERSPEED (crankshaft speed), rpm		4 220	4 220	4 220
MAXIMUM TURBOCHARGER SPEED, rpm		145 000	145 000	145 000
TEMPERATURE LIMITS	**°C (°F)**			
	Min opening up Oil Temperature	50 (122)	50 (122)	50 (122)
	Max Oil Temperature	140 (284)	140 (284)	140 (284)
	Min ambient temperature for starting	-32 (-26)	-32 (-26)	-32 (-26)
	Min opening up Cooling Fluid Temperature	60 (140)	60 (140)	60 (140)
	Max Cooling Fluid Temperature	105 (221)	105 (221)	105 (221)
	Max Gearbox Temperature	120 (248)	120 (248)	120 (248)
	Max Manifold Air Temperature	80 (176)	80 (176)	80 (176)
	Max Turbine Inlet Temperature	900 (1652)	900 (1652)	900 (1652)
PRESSURE LIMITS	KPa (psi)			
	Min Fuel Pressure (at inlet of LP engine pump)	20 (2.9)	20 (2.9)	20 (2.9)
	Min Oil Pressure	230 (33.4)	230 (33.4)	230 (33.4)
	Min Oil Pressure at idle	100 (14.5)	100 (14.5)	100 (14.5)
	Max Oil Pressure (cold start, max up to 20 sec)	650 (94.3)	650 (94.3)	650 (94.3)
	Max Manifold Pressure	225 (32.6)	225 (32.6)	225 (32.6)

CERTIFICATION BASIS RBHA 21.29 and RBHA 33, which endorses the 14 CFR Part 33 effective 01 February 1965 and Amendments 33-1 through Amendment 33-20.
The aviation authority for Germany, Luftfahrt-Bundesamt - LBA, originally type certificated this engine under its Type Certificate number 4631. The Type Certificate was transferred to European Safety Agency - EASA under EASA Type Certificate E.055, on 24 March 2006. The EASA began oversight of this product on behalf of Germany.
The ANAC validated these engine models under Brazilian Type Certificate number 2009T06.

Model	Date of Application	Date Type Certificate Issued/Revised
TAE 125-01	21 November 2003	23 June 2009
TAE 125-02-99	24 October 2006	23 June 2009
TAE 125-02-114	04 May 2009	23 June 2009

IMPORT REQUIREMENTS Each engine to be exported separately to the Brazil with a LBA or EASA airworthiness approval must have a Joint Aviation Authorities – JAA or EASA Form 1, Authorized Release Certificate. The JAA or EASA Form 1 should state that the particular engine is in conformity with the ANAC approved type design under the Brazilian Type Certificate 2009T06, is in a condition for safe operation and has undergone a final operational check.

NOTES:

NOTE 1 Dispatch Limitations: All engine systems and equipment must be functional prior to aircraft take-off. Any detected engine system or equipment failure must be corrected before next flight.

NOTE 2 The TAE 125-01, TAE125-02-99 and TAE125-02-114 engines are Life-Limited. Whole engine must be removed from service in accordance with the Airworthiness Limitations Section, Chapter 5 of the Maintenance manual.

NOTE 3 Overhaul of the core engine is not permitted. See Overhaul Manual for the accessory/parts permitted for overhaul.

NOTE 4 For the core engine a recommended engine life has been established. The Time Between Replacement – TBR is published in Service
Bulletin TM TAE 125-0001.

NOTE 5 The Instructions for Continued Airworthiness contained in the Operation & Maintenance Manual have been accepted by the ANAC. (see NOTE 17)

NOTE 6 The engines are approved for installation in RBAC 23 Normal and Utility airplanes categories only.

NOTE 7 This engine design features an integrated propeller control in the FADEC. The software of the ECU has been validated in accordance with DO-178B, level C. The approval of the engine and its FADEC does not include approval of the propeller control system.
FADEC: P/N 02-7610-55001 for TAE 125-01 and P/N 05-7610-K000101 for TAE 125-02-99 and TAE 125-02-114.
Software: P/N TAE – 125-m2.7 or later approved standard.
Software Mapping: Refer to Service Bulletin TM TAE 000-0007 for approved software P/N.

NOTE 8 The FADEC must not be installed in a dedicated fire zone. The installation conditions are defined in the Installation Manual.

NOTE 9 Engine model numbers may include suffixes in parentheses to define installation specific configuration changes. The software of the electronic engine control for each application has a specific software mapping. See Service Bulletin TM TAE 000-0007 for the installation
versions and software mappings. Also refer to Installation Manual for appropriate installation.

NOTE 10 There are no provisions for customer/aircraft furnished equipment. All accessories are part of the engine type design.

NOTE 11 Diesel fuel has not been approved as an alternative fuel in Brazil.

NOTE 12 Electrical Equipment: Refer to Installation Manual.

NOTE 13 Refer to Installation Manual for approved oil specification.

NOTE 14 Refer to Installation Manual for approved fuel and additive specification.

NOTE 15 Refer to Installation Manual for approved operating and starting envelope.

NOTE 16 EMI/Lightning: The engine control system has been tested according to DO 160 D for lightning protection and magnetic interference. The demonstrated levels are provided in the Installation Manual.

NOTE 17 ENGINE MANUALS:
Installation Manual – IM-02-01 for TAE 125-01; IM-02-02 for TAE 125-02-99 & TAE 125-02-114;
Operation & Maintenance Manual – OM-02-01 for TAE 125-01; OM-02-02 for TAE 125-02-99 & TAE 125-02-114;
Repair Manual – RM-02-01 for TAE 125-01; RM-02-02 for TAE 125-02-99 & TAE 125-02-114;
Overhaul Manual – OHM -02-01 for TAE 125-01; OHM-02-02 for TAE 125-02-99 & TAE 125-02-114.

NOTE 18 SERVICE INFORMATION:

Each of the documents listed below must state that it is approved by the European Aviation Safety Agency - EASA. Any such documents including those approved under a delegated authority, are accepted by the ANAC and are considered ANAC approved.
- Service bulletins,
- Operation & Maintenance manuals,
- Repair manuals and
- Overhaul manuals.

These approvals pertain to the type design only.

NOTE 19 The following engine parameters must be monitored:
- Propeller speed;
- Load;
- Oil pressure;
- Oil temperature;
- Coolant temperature;
- Gearbox temperature.

NOTE 20 The TAE 125 engine, including the FADEC, is approved for use with the propeller MTV-6-A/187- 129, MTV-6-A/190-129 and MTV-6-A-CF/CF187-129 models. This approval does not include the approval of the propellers and their control systems (see also Note 7).

NOTE 21 Sales name of each model:

TAE 125-01: Centurion 1.7;
TAE 125-02-99: Centurion 2.0;
TAE 125-02-114: Centurion 2.0 S.

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