TYPE-CERTIFICATE DATA SHEET

No. E.139

for Engine
ASTAZOU II series engines

Type Certificate Holder

Safran Helicopter Engines

64510 Bordes
France

For Models:
ASTAZOU II A
ASTAZOU II A2

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I. General

1. Type / Models

ASTAZOU II A, ASTAZOU II A2. These variants are approved for use on single-engine civil rotorcraft at the ratings and within the operating limitations specified below, subject to compliance with the powerplant installation requirements appropriate to approved installations.

Except where otherwise noted, data applies to all variants.

2. Type Certificate Holder

Safran Helicopter Engines
64510 Bordes
France

Design Organisation Approval No.: EASA.21J.070

Until 18 July 2016 Turbomeca
After 18 July 2016 Safran Helicopter Engines

3. Manufacturer

Until 18 July 2016 Turbomeca
After 18 July 2016 Safran Helicopter Engines

4. Date of Application

Not known (before 18th February 1964)

5. EASA Type Certification Date

EASA Type Certification of the ASTAZOU II A and ASTAZOU II A2 engines is granted, in accordance with Article 2 paragraph 3(a)(i) of EU Commission Regulation EC 1702/2003, on the basis of EU Member State Validations prior to 28 September 2003.

II. Certification Basis

1. Certification Specifications:

The ASTAZOU II A and ASTAZOU II A2 engines were originally approved under Type Certificate N° 24, modified 18th February 1964, issued by DGAC-France for the EUROCOPTER (formerly SUD AVIATION) SA 3180, SA 318 B and SA 318 C ALOUETTE ASTAZOU helicopters.

The ASTAZOU II A and ASTAZOU II A2 engines meet the requirements of AIR 2051, Chapter 8, Issue 1, dated 19 August 1957

2. Special Conditions:

None.

3. Deviations:

None

4. Equivalent Safety Findings:

None.

5. Environmental Protection Requirements:

Fuel Venting per ICAO Annex 16, Volume II, 2nd Edition, November 1993, Part 2, Chapter 2.

III. Technical Characteristics

1. Type Design Definition
The Type Design Definition is in accordance with the following SAFRAN HELICOPTER ENGINES Drawings.

	Complete Engine Part List	Bare Engine Part List	Equipment List	Definition of Interfaces Installation Drawing
ASTAZOU II A	0 236 00 501 0	0 236 00 500 0	0 236 85 507 0	0 235 10 900 0
ASTAZOU II A2	0 236 04 510 0	0 236 04 000 0	0 236 85 502 0	0 235 10 900 0

2. Description

The ASTAZOU II A is a single spool engine with an annular air intake, a single stage axial compressor, a single stage centrifugal compressor, an annular combustion chamber, a three stage axial turbine and a mechanical control system. A co-axial gearbox, housed in the hub of the air intake, reduces the rotation speed for the output shaft and drives the accessories.

The ASTAZOU II A2 variant is created by incorporation of modification TU 170 in the ASTAZOU II A. This modification replaces certain hot section components of the ASTAZOU II A engine with components used in the ASTAZOU III A engine, in order to improve design margins and durability.

3. Equipment

All equipment required for engine operation, except the exhaust pipe, is included in the engineType Design Definition.

4. Dimensions

	Length (mm)	Height (mm)	Width (mm)
ASTAZOU II A	1427,5	560	516
ASTAZOU II A2	1393		

5. Dry Weight
Dry weight of the fully-equipped engine, not including the exhaust pipe:

ASTAZOU II A	142 kg
ASTAZOU II A2	146 kg

6. Ratings
Rated power in kW(1):

Maximum Continuous (unlimited duration)	Take-off (once per hour)
353	390

(1) Minimum values defined under the following conditions:

- static sea-level standard-day conditions (15 °C, 1 013 mbar);
- on the engine test bed with hydraulic brake system;
- with the air bleed ports closed;
- with no accessory power extraction;
- with calibrated Safran Helicopter Engines air intake duct,
- with straight cylindrical exhaust pipe, outlet area ∅ 260 mm.

7. Control System

The ASTAZOU II A and ASTAZOU II A2 engines have a mechanical control system.

8. Fluids (Fuel, Oil, Coolant, Additives)

8.1 Fuel

For a list of approved fuels and fuel additives consult the Operation Manual.

8.2 Oil

For a list of approved oils and oil additives consult the Operation Manual.

9. Aircraft Accessory Drives

Accessory Pad	Type	Direction of rotation(1)	Speed ratio to turbine shaft	Maximum steady state shaft power kW	Maximum torque Nm	Maximum static overhung moment Nm
Alternator	Not defined	CCW	1 / 3.62	12	33.5	15

(1) Facing the pad: CW = clockwise, CCW = counter-clockwise.

10. Maximum Permissible Air Bleed Extraction

Maximum air bleed for aircraft services is 70 g/s at sea-level standard-day conditions.

IV. Operating Limitations

Maximum air bleed for aircraft services is 70 g/s at sea-level standard-day conditions.

1. Temperature Limits

1.1 Exhaust gas temperature limits

Takeoff	525°C
Maximum continuous	500°C

1.2 Oil temperature

Minimum temperature for take off: 0°C

Maximum operating temperature: +75°C

2. Speed Limits

Steady state, normal operating conditions: 43 500 rpm ± 200 rpm
Transient, sudden loading and unloading: 43 500 rpm ± 1 500 rpm

Note: The ouput shaft speed is reduced from the above in the ratio: 1 / 7.34728

3. Pressure Limits

3.1 Fuel pressure

Pressure (gauge) at engine inlet: 10 to 50 kPa

3.2 Oil pressure

Operating range (gauge): 100 to 300 kPa for an engine speed of 43 500 rpm

5. Time Limited Dispatch (TLD)

Not applicable to engines with mechanical controls.

6. ETOPS Capability

The engine is not approved for ETOPS capability in accordance with CS-E 1040.

V. Operating and Service Instructions

Operation Manual	Maintenance Manual	Overhaul Manual
235 10 930	236 01 932	236 01 934

For Service Letters and Service Bulletins, refer to the SB and SL directory.

VI. Notes

1. Life-limited engine components are listed in Chapter 5 of the Maintenance and Overhaul Manuals.

2. Conversion from non-civil use:

This note is applicable to the following cases:

Case 1: ASTAZOU II A or ASTAZOU II A2 engines originally assembled by Safran Helicopter Engines and having previously been used by an operator engaged in military, customs, police or similar services, and not under the control of a civil Authority.

Case 2: ASTAZOU II A or ASTAZOU II A2 engines created by converting ASTAZOU II AF or ASTAZOU II AF2 engines respectively. ASTAZOU II AF or ASTAZOU II AF2 are military variants of the ASTAZOU II A and ASTAZOU II A2, known to be installed in, but not limited to, a military variant of the ALOUETTE ASTAZOU helicopter.
The compliance of such engines with the European rules enabling issuance of an aircraft standard certificate of airworthiness must be checked. Their configuration, including design changes and repairs, does not necessarily conform to the type definition approved by EASA, and it is possible that in operation they have exceeded the limits approved by EASA. Before a standard certificate of airworthiness is issued to an aircraft in which such engines are installed, an EASA Form 1 must be issued for these engines. This requires incorporation of the following Safran Helicopter Engines Mandatory Service Bulletins:

Case 1: A236 72 0803 Original Issue (or any subsequent approved issue).

Case 2: A236 72 0800 Original Issue (or any subsequent approved issue).

VII. SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

n/a

II. Type Certificate Holder Record

Until 18 July 2016 Turbomeca
After 18 July 2016 Safran Helicopter Engines

III. Change Record

Issue	Date	Changes	TC issue
Issue 01	29 April 2009	Initial Issue	29 April 2009 Initial issue
Issue 02	01 August 2016	Name change from Turbomeca to Safran Helicopter Engines	01 August 2016

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