



---

# TYPE-CERTIFICATE DATA SHEET

No. EASA E.076

**for Engine**  
SR305-230 Series

**Type Certificate Holder**  
Safran Aircraft Engines

2 Boulevard du Général Martial Valin  
75015 Paris  
France

For Models:  
SR305-230  
SR305-230E



Intentionally left blank



## TABLE OF CONTENTS

<b>I. General</b> .....	<b>4</b>
<b>1. Type / Models:</b> .....	<b>4</b>
<b>2. Type Certificate Holder</b> .....	<b>4</b>
<b>3. Manufacturer</b> .....	<b>4</b>
<b>4. EASA Certification Application Date</b> .....	<b>4</b>
<b>5. EASA Type Certification Date</b> .....	<b>4</b>
<b>II. Certification Basis</b> .....	<b>4</b>
<b>1. Reference Date for determining the applicable airworthiness requirements:</b> .....	<b>4</b>
<b>2. EASA Certification Basis</b> .....	<b>4</b>
<b>2.1. Airworthiness Standards</b> .....	<b>4</b>
<b>2.2. Special Conditions (SC)</b> .....	<b>5</b>
<b>2.3. Equivalent Safety Findings (ESF)</b> .....	<b>5</b>
<b>2.4. Deviations</b> .....	<b>5</b>
<b>2.5. Environmental Protection</b> .....	<b>5</b>
<b>III. Technical Characteristics</b> .....	<b>5</b>
<b>1. Type Design Definition</b> .....	<b>5</b>
<b>2. Description</b> .....	<b>5</b>
<b>3. Equipment</b> .....	<b>5</b>
<b>4. Dimensions (mm)</b> .....	<b>6</b>
<b>5. Dry Weight (kg)</b> .....	<b>6</b>
<b>6. Ratings</b> .....	<b>6</b>
<b>7. Control System</b> .....	<b>6</b>
<b>8. Fluids (Fuel, Oil, Coolant, Additives)</b> .....	<b>6</b>
<b>9. Aircraft Accessory Drives</b> .....	<b>7</b>
<b>10. Maximum Permissible Air Bleed Extraction</b> .....	<b>7</b>
<b>IV. Operating Limitations</b> .....	<b>7</b>
<b>1. Temperature Limits</b> .....	<b>7</b>
<b>2. Speed Limits</b> .....	<b>8</b>
<b>3. Torque Limits</b> .....	<b>8</b>
<b>4. Pressure Limits</b> .....	<b>8</b>
<b>4.1 Fuel Pressure</b> .....	<b>8</b>
<b>4.2 Oil Pressure (relative)</b> .....	<b>8</b>
<b>4.3 Air Inlet Manifold Pressure Limits:</b> .....	<b>8</b>
<b>4.4 Maximum Operating Altitude (standard atmosphere):</b> .....	<b>8</b>
<b>5. Time Limited Dispatch (TLD)</b> .....	<b>9</b>
<b>6. ETOPS Capability</b> .....	<b>9</b>
<b>V. Operating and Service Instructions</b> .....	<b>9</b>
<b>VI. Notes</b> .....	<b>10</b>
<b>SECTION: ADMINISTRATIVE</b> .....	<b>11</b>
<b>I. Acronyms and Abbreviations</b> .....	<b>11</b>
<b>II. Type Certificate Holder Record</b> .....	<b>11</b>
<b>III. Change Record</b> .....	<b>11</b>



## **I. General**

### **1. Type / Models:**

SR305 / SR305-230, SR305-230E

### **2. Type Certificate Holder**

Safran Aircraft Engines  
2 Boulevard du Général Martial Valin  
75015 Paris  
France

Design Organisation Approval No.: EASA.21J.485

### **3. Manufacturer**

Safran Aircraft Engines

### **4. EASA Certification Application Date**

SR305-230	11 February 1997 (See note 8)
SR305-230E	16 March 2009

### **5. EASA Type Certification Date**

SR305-230	20 April 2001 (See note 8)
SR305-230E	24 January 2011

## **II. Certification Basis**

### **1. Reference Date for determining the applicable airworthiness requirements:**

11 February 1997

### **2. EASA Certification Basis**

#### **2.1. Airworthiness Standards**

SR305-230	JAR-E Change 10 (15 August 1999)
SR305-230E	CS-E amendment 1, as issued by EASA Decision N°2007/015/R on December 03, 2007, except paragraph CS-E 130(g) JAR-E 220 Change 10 "Fire Precautions" (15 August 1999)



## 2.2. Special Conditions (SC)

SR305-230	SC1 – Electronic Engine Control SC2 – Water Contaminated Fuel
SR305-230E	None

## 2.3. Equivalent Safety Findings (ESF)

SR305-230	JAR-E-60 – Provision for Instruments JAR-E-180 – Propeller Functioning Tests JAR-E-440 – Endurance Tests JAR-E-140, E-310, E-350, E-400, E-440 – Engine Control Parameters JAR-E-420 – Induction Systems – Pressure Tests
SR305-230E	CS-E 440(b)(3) Endurance Tests – Schedule for Engine Incorporating a Turbocharger

## 2.4. Deviations

None

## 2.5. Environmental Protection

None applicable for piston engines

## III. Technical Characteristics

### 1. Type Design Definition

SR305-230	Part list reference SR305-230-20, and all later approved engine part lists
SR305-230E	Part list reference SR305-230E-08, and all later approved engine part lists

### 2. Description

Direct drive, 4 stroke, turbocharged Diesel cycle piston engine; Four horizontally opposed cylinders; Air and oil cooled; Electronically controlled fuel injection system; 4988 cm<sup>3</sup> displacement.

SR305-230 engines which comply with SMA Service Bulletin SB-01-76-002 (SMA DET C-06-009) have an increased EMI/lightning protection level. They are identified as SR305-230-1 on the engine data plate. The same level of protection is provided on the SR305-230E.

(See note 6)

### 3. Equipment

The engine starter is part of the engine type design. Refer to the engine part list for details.



#### 4. Dimensions (mm)

	Overall Length	Width	Height
SR305-230	834	930	750
SR305-230E	834	931	784

#### 5. Dry Weight (kg)

SR305-230	195	SR305-230E	207
-----------	-----	------------	-----

#### 6. Ratings

SR305-230 and SR305-230E	
Take-Off Power	Maximum Continuous Power
169 kW at 2200 rpm	169 kW at 2200 rpm

(See note 2)

#### 7. Control System

Injected fuel is metered by a mechanical pump which is controlled by a single channel electronic calculator. A mechanical backup mode is available in case of failure of the electronic control system. The engine control software has been designed and tested according to the requirements of DO 178B, level C and is part of the engine Type Design – At initial certification:

- SR305-230 software P/N SP01160014-0 and cartography P/N SP01160029
- SR305-230E software P/N SP01160095-0 and cartography P/N SP01160102-3

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

Approved fuels:

SR305-230	JET-A1 (F-35) JET-A1, JET-A (ASTM D1655) TS-1 (GOST 10227)
SR305-230E	JET-A1, JET-A (ASTM D1655) TS-1 (GOST 10227) JET-A1 (GOST R 52050-2006) JP8 (MIL-DTL-83133) No. 3 Jet Fuel (GB 6537-2006)

(See note 9)

Approved fuel additives: Refer to the applicable engine “Operating Manual” or “Engine Maintenance Manual” documents.

Approved oil brands: Refer to the applicable engine “Operating Manual” or “Engine Maintenance Manual” documents.



## 9. Aircraft Accessory Drives

	Rotation	Speed (rpm)	Max. Torque	Type of Drive
Propeller control	CCW	2708	24 N.m	AND 20010
Vacuum pump (SR305-230)	CW	2589	10.5 N.m	AND 20000
Vacuum pump (SR305-230E)	CW	3492	9.2 N.m	AND 20000
Alternator	CCW	2200	N/A	Belt
Air conditioning compressor or 2 <sup>nd</sup> alternator	CCW	2200	N/A	Belt

CW = Clock-Wise

CCW = Counter-Clock-Wise

Speed is indicated for a reference engine speed of 2200 rpm.

Accessory drive direction of rotation is as viewed facing the drive or facing the front of the engine for accessories driven by the front pulley.

## 10. Maximum Permissible Air Bleed Extraction

Not applicable

## IV. Operating Limitations

### 1. Temperature Limits

Exhaust Gas Temperature:

The exhaust gas temperature is measured at turbocharger inlet. The exhaust gas temperature gauge must be installed in accordance with the applicable "Engine Installation Manual" document.

SR305-230	730 °C maximum
SR305-230E	790 °C maximum

Oil Temperature (°C):

SR305-230 and SR305-230E	
Minimum for starting	minus 20
Minimum for power up	+ 65
Maximum Continuous	+ 120

Fuel Inlet Temperature (°C):

SR305-230 and SR305-230E	
Minimum	Use of anti-ice additive is mandatory when fuel temperature is below 0°C. Refer to the applicable engine "Operating Manual" or "Engine Maintenance Manual" documents
Maximum	+ 65



Cylinder Head Temperature: 200 °C maximum

The cylinder head temperature gauge must be installed in accordance with the applicable “Engine Installation Manual” document.

Inlet Manifold Air Temperature: 65 °C maximum

## 2. Speed Limits

Maximum turbocharger rotational speed:

SR305-230	146000
SR305-230E	135000

The engine control actuator must be adjusted in accordance with the applicable “Engine Maintenance Manual” document to prevent exceedance of the maximum turbocharger speed.

Maximum engine rotational speed:

SR305-230 and SR305-230E		
Take-Off	Maximum Continuous	Transitory (3 seconds)
2200	2200	2350

## 3. Torque Limits

Not applicable

## 4. Pressure Limits

### 4.1 Fuel Pressure

Minimum fuel pressure at engine pump inlet: 60 kPa absolute

### 4.2 Oil Pressure (relative)

Minimum, at idle:	100 kPa
Normal – SR305-230:	320 kPa to 620 kPa
Normal – SR305-230E:	420 kPa to 650 kPa
Maximum, cold engine:	1200 kPa

### 4.3 Air Inlet Manifold Pressure Limits:

Minimum in normal mode and Maximum in mechanical backup mode (in static sea level standard conditions - 15°C and 1013.2 hPa - and for an engine installed in accordance with the applicable “Engine Installation Manual”):

SR305-230: 271 kPa

SR305-230E: 288 kPa

Refer to the applicable engine “Operating Manual” document for other ambient conditions.

### 4.4 Maximum Operating Altitude (standard atmosphere):

SR305-230	3810 m (12,500 feet)
SR305-230E	6100 m (20,000 feet)





### 5. Time Limited Dispatch (TLD)

The engine is not approved for Time Limited Dispatch. 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. For special instructions see the applicable engine "Maintenance Manual".

### 6. ETOPS Capability

Not applicable

### V. Operating and Service Instructions

Manuals	SR305-230 SR305-230-1	SR305-230E Configuration MA01 and MA02(*)	SR305-230E Configuration C1 (*)
Engine Installation Manual	TP230-EIM (DJC 01-01) revision 4	TP230E-EIM (NT-CE 01-01) revision 4	TP230E-C1-EIM revision 0
Operating Manual	TP230-OM (DJC 01-02) revision 4	TP230E-OM (NT-CE 01-02) revision 4	TP230E-C1-OM revision 0

Instructions for Continued Airworthiness (ICA)	SR305-230 SR305-230-1	SR305-230E Configuration MA01 and MA02(*)	SR305-230E Configuration C1 (*)
Engine Maintenance Manual	TP230-EMM (DJC 01-03) revision 0	TP230E-EMM (NT-CE 01-03) revision 5	TP230E-C1-EMM revision 0
Engine Overhaul Manual	TP230-EOM (DJC 01-04) revision 0	TP230E-EOM (NT-CE 01-04) revision 1	TP230E-C1-EOM revision 0
Engine Illustrated Parts Catalogue	TP230-EIPC revision 0	TP230E-EIPC (NT-CE 01-05) revision 5	TP230E-C1-EIPC revision 0
Illustrated Tool and Equipment Manual	TP230-ITEM revision 1	TP230E-ITEM revision 2	TP230E-C1-ITEM revision 0
Component Maintenance Manuals	As published by SMA		
Engine Service Bulletins	As published by SMA		

And later approved revisions of these manuals

(\*) The configuration identifies minor engine variations in relation with the aircraft application and is indicated on the engine identification plate.



## **VI. Notes**

1. The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable "Engine Maintenance Manual" document, chapter 5 "Airworthiness Limitations".
2. Engine take-off rating is established in the following conditions:
  - Static sea level standard conditions of 15°C and 101.32 kPa;
  - No aircraft accessory loads.Refer to the applicable "Engine Installation Manual" document for power curves vs. altitude and ambient temperature conditions.
3. The engine is approved for installation in Normal and Utility Aeroplane Category only.
4. The operating and starting envelope is provided in the applicable "Engine Installation Manual" document.
5. The engine electronic control unit must not be installed in a dedicated fire zone. The installation conditions are defined in the applicable "Engine Installation Manual" document.
6. The protection of the engine control system against electromagnetic interference (EMI) and lightning has been tested in accordance with DO 160D. The demonstrated levels of protection are defined in the applicable "Engine Installation Manual" document.
7. The SR305-230 engine was initially certified with a 2 blade constant speed propeller with a moment of inertia of 3.5 kg.m<sup>2</sup> and a weight of 35 kg. The list of propellers that are approved for use with the engine is published in the applicable "Engine Installation Manual" document.
8. EASA Type Certificate and Type Certificate Data Sheet N°E.076 replaces DGAC-France Type Certificate and Type Certificate Data Sheet N°M23.
9. A minimum fuel Cetane index number of 37 is recommended.



**SECTION: ADMINISTRATIVE**

**I. Acronyms and Abbreviations**

n/a

**II. Type Certificate Holder Record**

Société de Motorisations Aéronautiques (SMA) 10-12, rue Didier Daurat 18021 Bourges Cedex France	From 20 April 2001 to 17 Dec. 2017
Safran Aircraft Engines 2 Boulevard du Général Martial Valin 75015 Paris France	From 18 Dec. 2017

**III. Change Record**

TCDS Issue	Date	Changes	TC Issue Date
Issue 01	20 April 2001	Initial Issue	Initial Issue, 20 April 2001
Issue 02	07 Jan. 2009	Increased maximum oil pressure limit for SR305-230 (Certificate EASA.E.C.01407) - Increased maximum turbocharger rotational speed limit for SR305-230 (Certificate EASA.E.C.01607) - Increased cylinder heads and oil temperature limits for SR305-230 (Certificate EASA.E.C.01727)	20 April 2001
Issue 03	24 Jan. 2011	Certification of the SR305-230E model	Amended, 24 Jan. 2011
Issue 04	04 May 2012	Addition of TS-1 (GOST 10227) fuel for SR305-230E (Certificate 10039456) - Introduction of SR305-230E configurations MA01 and C1 (Certificate 10039392)	24 Jan. 2011
Issue 05	15 Nov. 2012	Addition of Jet No.3 fuel for SR305-230E (Certificate 10042217) - Addition of JP-8 fuel for SR305-230E (Certificate 10042218) - Addition of Russian JET-A1 fuel for SR305-230E (Certificate 10042219)	24 Jan. 2011
Issue 06	28 June 2016	Introduction of configuration MA02 (Certificate 10056834) – Correction of SR305-230E air inlet manifold pressure limit (Certificate 10058573) – Correction of SR305-230E maximum oil pressure limit (NT-CE 00-01) – Transfer of SMA Service Bulletin SB-01-73-001 information into engine manuals	24 Jan. 2011
Issue 07	18 Dec. 2017	Transfer of engine type certificate to Safran Aircraft Engines (DOA EASA.21J.485).	Transferred, 18 Dec. 2017

-END-

