

European Aviation Safety Agency

EASA
SPECIFIC AIRWORTHINESS
SPECIFICATION
for
SUKHOI SU-31

This Specific Airworthiness Specification is issued in accordance with Regulation (EC) 216/2008 Article 20(1)(b). This document is generic and it should be read in association with any Airworthiness Approval Note for the approval of Flight Conditions for any aircraft issued with an EASA Permit to Fly prior to 31 October 2008, which is specific to a particular serial number. In the event of conflict, please contact EASA: general.aviation@easa.europa.eu.

The Sukhoi Su-31 is a single seat variant of the Su-29 2-seat aircraft (see EASA.SAS.A.093). In all respects it is identical, save for the deletion of the front cockpit.

The Russian Type Certificate holder is:

Advanced Aircraft Construction Technologies
Lugneckaya Quay 2/4
Moscow 119270
Russian Federation

Fax: +7 495 242 7474
Email: aact@online.ru

The Su-31 has obtained Type Certification by the Hungarian Civil Aviation Authority

SECTION 1: Aircraft Design Definitions

1.1 Aircraft designed and built to conform to Russian Type Certificate code AR-23 and this was accepted for the issue for a Hungarian Type Certificate by the Hungarian CAA.

1.1.1 Technical Characteristics and Operating Limitations

Engine	One Vedeneyev (OKBM) M14P of 360 HP or M14PF of 400HP. 9 cylinder radial piston engine, which is geared and supercharged.
Fuel	To Russian standard B91/115 GOST 1012-72. Octane rating minimum 91.
Engine Limits	M14P At maximum speed (99%; 2892 rpm) 5 minutes At 101% (2950 rpm) up to 1 minute Maximum continuous revolutions 82% (2395 rpm) M14PF Maximum revolutions 103% (3010 rpm) for one minute Oil Temperature Oil temperature minimum 40° centigrade Maximum prolonged 75° centigrade Maximum permissible for 15 minutes 85° centigrade Cylinder Temperature Cylinder temperature minimum 120° centigrade Maximum prolonged operation 220° centigrade Maximum permissible up to 15 minutes 240° centigrade
Propeller	The following propellers are approved: V-530TA-D35 2-blade propeller manufactured by Speriot of Stupino, Russia. MTV-3-250 or 260 -27 or -29 3-blade propeller manufactured by MT Propeller of Straubing, Germany. MTV-9-250 or 260 -27 or -29 3-blade propeller manufactured by MT Propellers of Straubing, Germany. Diameter of V-530 propeller is 240cm, and of MTV-3 and MTV-9 propellers of either 250 or 260cm.
Airspeed Limits	Vne 450 km/h Vmo 380 km/h Vma 360 km/h Vso 106 km/h
C.G. Range	24% to 31.5% MAC
Maximum Weight	Certificated empty weight 670 kgs. Maximum all-up weight 1100 kgs
Aerobatic Limitations	Aerobatic manoeuvres are permitted. Intentional spinning is permitted Load factor limitations: +12g / -10g

Number of Seats	One										
Maximum Baggage	Weight limit in rear baggage compartment 15kgs. However this significantly affects Centre of Gravity and the AFM must be consulted before flights, particularly aerobatic, with any baggage.										
Fuel Capacity	Fuselage tank 74 litres Two wing tanks of 105 litres each Fuselage collector tank 3 litres (In the case of the wing tanks and main fuselage tank, useable fuel can be up to two litres less than the above).										
Oil Capacity	16 litres total for ferry version; 10 litres for aerobatic version										
Oil Cooler	It is permitted to change the standard oil cooler, part number 2281B, for the larger oil cooler, part number 2281B-OM, for use in hot conditions.										
Control Surface Movements	<table><tr><td>Wing flaps</td><td>N/A</td></tr><tr><td>Aileron</td><td>+/- 28°</td></tr><tr><td>Elevator</td><td>+/- 25°</td></tr><tr><td>Rudder</td><td>+/- 32°</td></tr><tr><td>Elevator trim tap</td><td>+/- 20°</td></tr></table>	Wing flaps	N/A	Aileron	+/- 28°	Elevator	+/- 25°	Rudder	+/- 32°	Elevator trim tap	+/- 20°
Wing flaps	N/A										
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Elevator	+/- 25°										
Rudder	+/- 32°										
Elevator trim tap	+/- 20°										
Tyre pressures	Main wheels – 3.5 / 4 kgf / cm ² Tail wheel – 3.0 kgf / cm ² (many Su-31 are fitted with solid tail wheel)										
Stall Warning	N/A										
Equipment	One “Briz” radio.(A variety of normal avionics installations have also been installed). Smoke system (comprising of 2 x 15litre tanks, one in each wing root, with a bleed from the aircraft compressed air system controlled by solenoids to pump smoke oil into the exhaust pipe.										
Flight Manual	Approved Sukhoi Su-31 flight manual.										

1.2 Pertinent Data

Centre of Gravity The Su-31 AFM gives the method for detailed calculations of Centre of Gravity according to pilot weight; fuel; oil; smoke oil; baggage.

1.3 Lifetime

Su-31 is cleared for an initial ‘Lifetime’ before major inspection of 1250 hours or 12 years, whichever comes first.

Lifetime can be extended by the execution of the Sukhoi Lifetime Extension Programme, identified as AST Lifetime Doc. A, Version II.

Subject to successful completion of the Lifetime Extension Programme above, the aircraft will be cleared for a further 6 years or 600 hours, whichever comes first.

This Lifetime Extension Procedure is performed repetitively.

There are certain other 'lived' items, importantly: engine/propeller/air-bottle/flexible hoses. These are referred to in the appropriate Maintenance Manuals, and also the AAN for the Su-31 issued by EASA.

1.4 Life-Limited Parts

The list of lived items applicable to the Su-29 aircraft are as follows, and must be incorporated in the maintenance schedule for the aircraft.

Description	Life Limit Hours/years
Engine M14P/PF	500 hrs from new or o/h
Engine M14R/M9F	300 hrs from new or o/h
Propeller V530TA-D35	500 hours / 6 years
Propeller MTV-9-B-C/CL250-27 / 29	1000 hours / 6 years
Air Bottle	-/5 or by appropriate inspection
Flexible Pipes	-/10

SECTION 2: Airworthiness Directives (Service Bulletins)

		SUKHOI	31		
22	Directive 31-18-9/94 dated 23.06.94	Main fuel tank replacement after 100 hours	31.001-BD	All Russia based Su-31s	
23	Directive Su-31-303 -514-96KB	Fuselage frame reinforcement at the wing attachment points and at the elevator bell crank attachment point.	31.002-BD	S/N 01-01 ; 01-02	Done
24	Directive dated 18.04.96	The installation of loops along the rudder cable linkage in order to limit cables play	31.003-BD	S/N from 01-01 to 03-05	Done
25	Directive SU-31 -01-96 dated 23.05.96	Wing replacement	31.004-BA		Done
26	Directive SU-31 -03-96 dated 21.06.96	Wing spar visual inspection	GK-283/ 31.005BD		Done

27	Directive SU-31 -03-96 dated 21.06.96	Wing spar ultrasonic inspection	GK-283/31.006BD		Done
28	Statement SKO dated 01.09.97	Fuel breathing pipe modification	31.007-BD	All Su-26, Su-29, Su-31 planes	Done
29	Chief designer directive	Installation of bolts instead of studs at the upper landing gear attachment point	31.008-BU	To be issued soon	To be issued soon

NOTE

No Service Bulletins (Airworthiness Directives) have been issued subsequent to 1996.

Designer and organisation responsible for the Type: Advanced Aircraft Construction Technologies, will provide details of any further Service Bulletins, contacts on Page 1.

SECTION 3: Occurrence Reporting

The Specific Airworthiness Specification may be used as a basis for the issue of a Restricted Certificate of Airworthiness in accordance with 21A.173(b)(2) under the following conditions:

- a) The holder of a Restricted Certificate of Airworthiness based on this Specific Airworthiness Specification shall report to the State of Registry all information related to occurrences associated with the operation of the aircraft which affects or could affect the safety of operation¹.
- b) Such reports shall be despatched within 72 hours of the time when the occurrence was identified unless exceptional circumstances prevent this.
- c) The State of Registry shall forward the information received under (a) to the Agency when it relates to failures, malfunctions, defects or other occurrences which cause or might cause adverse effects on the continuing airworthiness of the aircraft.

SECTION 4: Other Limitations

4.1 Eligibility

The SAS should not be seen as a mechanism for avoiding type certification in accordance with Part 21.

This SAS has been used as a transition mechanism for aircraft that had not been certificated in accordance with Part 21 but which were already on the registers of EU member states on accession to the EU (Commission Regulation (EU) No 748/2012, Article 5).

Whilst it includes these aircraft in the EU system, it is not intended to be used to allow the import of additional aircraft of the same type which should be certificated in accordance with Part-21.

The applicability of this SAS is limited to individual aircraft by serial number. The only Su-31 aircraft eligible for a Restricted Certificate of Airworthiness (RCoA) in accordance with article 21.A.173(b)2 are those with serial numbers listed in this section:

40546, 40579, 01-01, 01-03, 02-05, 04-01, 04-02, 05-05, 06-04

4.2 This aircraft is limited to non-commercial operations.

4.3 Aircraft should be flown by day in visual meteorological conditions only.

¹ AMC 20-8 contains guidance describing the occurrences which are to be reported

4.4 Maximum permitted altitude 10,000 feet.

4.5 Flight shall be limited to the following:

- a) Aerobatic competition flights
- b) Training for aerobatic competition flights
- c) Positioning flights
- d) Aerobatic displays
- e) Aerobatic instruction

4.6 All limitations in the applicable flight manual must be complied with.

SECTION 5: Change Record

Issue 1	31 October 2008	
Issue 2	21 June 2011	To record approval of alternative oil cooler
Issue 3	1 March 2013	Eligible serial numbers added in section 4