TYPE CERTIFICATE DATA SHEET

No. EASA.R.516

for

H160

Type Certificate Holder

Airbus Helicopters

Aéroport International Marseille – Provence
13725 Marignane CEDEX
France

For Model: H160-B

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SECTION 1: H160-B

I. General

1.	Type/ Model	
	1.1 Type	H160
	1.2 Model	H160-B
2.	Airworthiness Category	Large Rotorcraft, Category A and B
3.	Manufacturer	Airbus Helicopters Aéroport International Marseille – Provence 13725 Marignane CEDEX, France
4.	Type Certification Application Date	16 November 2012
5.	State of Design Authority	EASA
6.	EASA Type Certification Date	01 July 2020

II. Certification Basis

1. Reference Date for determining the applicable requirements: 01 November 2016
2. Airworthiness Requirements

   Certification Specifications for Large Rotorcraft, CS-29 Amendment 3, dated 11 December 2012 except for CS 29.917, CS 29.927, and CS 29.1585 of CS-29 Amendment 5, dated 14 June 2018
3. Special Conditions

   SC E-01 - Extended Take-Off Power Duration

   SC E-32 - Continued Flight with Cargo/Baggage Compartment Fire Detected

   SC F-01 - Protection from the effects of High Intensity Radiated Fields (HIRF)

   SC F-13 - Non-rechargeable Lithium Battery Installations

   SC F-35 - Equipment, Systems and Network Information Security
4. Deviations

   DEV D-21 - CS 29.735 (c) (2) - Electric Brake Slope Landing
5. Equivalent Safety Findings

   ESF D-15 - CS 29.807(c) - Passenger emergency exits / other than side-of-fuselage

   ESF D-16 - CS 29.807 (d)(2) and (d)(3) - Ditching emergency exit for passengers

   ESF D-17 - CS 29.855 - Fires in cargo and baggage compartments

   ESF D-19 - CS 29.807 (a) (4) - Passenger emergency exits

   ESF E-07 - CS 29.1203(d) - Fire detection electrical circuit testability

   ESF E-28 - CS 29.1145 - Ignition Switches

   ESF E-29 - CS 29.1195 - Multipurpose Fire Extinguishing System

   ESF E-35 - CS 29.1191 - Backside Fire Ignition

   ESF F-03 - CS 29.1305, CS 29.1351, CS 29.1435 - Part time display of vehicle parameters

   ESF F-04 - CS 29.1303(g)(2), CS 29 App B VIII(a)(2) - Independent Power Source for Standby Attitude Instrument

   ESF F-05 - CS-29, Appendix B VIII c – Thunderstorm Lights

   ESF G-03 - CS 29.1305, CS 29.1309, CS 29.1525, CS 29.1549 - Engine Training Mode

ESF G-05 - CS 29.1545, CS 29.1549 - Airspeed and Powerplant indicators green arcs

ESF G-06 - CS 29.1555(c)(1) - Usable fuel capacity marking

6. Environmental Protection Requirements

8.1 Noise Requirements	Chapter 8 of Part II of Volume I, Seventh Edition (Amendment 11-B) of ICAO Annex 16 to the Chicago Convention (as implemented in CS-36, Amendment 4, dated 12 January 2016) For details see TCDSN No. EASA.R.516
8.2 Emission Requirements	Chapter 2 of Part II of Volume II, Third Edition (Amendment 8) of ICAO Annex 16 to the Chicago Convention (as implemented in CS-34, Amendment 2, dated 12 January 2016)

7. Operational Suitability Data (OSD) (See SECTION 2 below)

7.1 Master Minimum Equipment List	Certification Specifications and Guidance Material for Master Minimum Equipment List, CS-MMEL, initial issue dated 31 January 2014
7.2 Flight Crew Data (FCD)	Certification Specifications for Operational Suitability Data (OSD) Flight Crew Data, CS-FCD, initial issue dated 31 January 2014
7.3 Simulation Data	Certification Specifications and Guidance Material for Simulator Data, CS-SIMD, initial issue dated 02 December 2014
7.4 Maintenance Certifying Staff Data	*reserved*

III. Technical Characteristics and Operational Limitations

1. Type Design Definition

- U000A0257E01_DDD H160-B Type Design Definition - Issue H, and subsequent issues
- U000A0318E01_DDD H160-B Optionals Type Design Definition - Issue G, and subsequent issues

2. Description

Medium twin-engine passenger transport helicopter, conventional configuration

Main rotor:	Spheriflex, 5 blades
Tail rotor:	Fenestron ducted tail rotor, 10 blades
Fuselage:	Composite structure
Landing gear:	Tricycle, retractable
Control system:	Mechanical with hydraulic actuation
Powerplant:	2 independent freewheel turbines

3. Equipment

As required by compliance with the Certification Basis and listed in the Type Design Definition documents.

4. Dimensions

4.1 Fuselage	Length:	13.96 m
	Width :	3.54 m
	Height:	4.91 m

4.2 Main Rotor Diameter: 13.40 m

4.3 Tail Rotor Diameter: 1.20 m

5. Engine

5.1 Model

SAFRAN HELICOPTER ENGINES
ARRANO 1 Series / ARRANO 1A
Number: 2

5.2 Type Certificate

EASA TC/TCDS No.: EASA.E.095

5.3 Limitations

5.3.1 Installed Engine Limitations and Transmission Torque Limits (see Note 7.)

	Torque limits [%] at MBG input	Gas generator rpm [%]	Temperature TOT [°C]
AEO 20s transient	108%	46550 (105.5%)	934
Take-off / 30-min AEO	100% up to Vy+10 kt 93.7% above Vy+ 30 kt	45910 (104.0%)	912
AEO-MCP	93.6%	45470 (103.0%)	886
OEI (30 sec)	145% (72,5% at output level)	47590 (107.8%)	991
OEI (2 min)	127.5% (63,8% at output level)	46620 (105.6%)	957
OEI CT	112.1% (56.0% at output level)	46130 (104.5%)	914

5.3.2 Other Engine and Transmission Torque Limits

Refer to approved RFM

6. Fluids (Fuel / Additives / Oil)

6.1 Fuel

JET A, JET A-1, JP-8, JP8+100, JP-5, No.3 Jet Fuel, TS-1 (TC-1) / RT(PT)
For code No., specifications and more details refer to approved RFM

For alternative authorized fuels refer to approved RFM

6.2 Additives

Refer to approved RFM

6.3 Oil

6.3.1 Engine lubricants

Oil type	NATO code	Specification				Class	Approved oil trademarks
		France	USA		UK		
			Military	Civil			
RECOMMANDED USE							
Synthetic 5 cSt	O-154	-	MIL-PRF-23699	SAE AS 5780	-	HTS	- BP Turbo Oil 2197 - Mobil Jet Oil 254
NORMAL USE							
Synthetic 5 cSt	O-156	DCSEA 299	MIL-PRF-23699	SAE AS 5780	DEF STAN 91-101	STD	- AeroShell Turbine Oil 500 - Castrol 5000 - Mobil Jet Oil II - Total Aeroturbine 535 - Total Preslia SE Jet - Turbonycoil 600
	O-152	-	MIL-PRF-23699		-	CI	- Castrol Aero J5

For replacement oil, cold weather oil and and further details refer to approved RFM

6.3.2 MGB lubricants

Type of oil	Temperature limitations	Approved brands (other products are excluded)	Specifications			
			NATO	US	UK	FR
Mineral oil 8 cSt	For starting -25°C≤ OAT No limitation for flight	Total / aerogear 823	O-155	MIL.PRF 6086 grade M	DTD.581 C OEP.70	AIR 3525
Mineral oil 12 cSt	For starting -25°C≤ OAT No limitation for flight	Total / aerogear 1032				
Synthetic oil 3 cSt	-40°C≤ OAT≤ +10°C For starting and flight	Nyco/ Tubonycoil 160	O-148	MIL.PRF 7808 grade 3		AIR 3514

For further details refer to approved RFM

6.3.3 TGB lubricants

Type of oil	Temperature limitations	Approved brands (other products are excluded)	Specifications			
			NATO	US	UK	FR
Synthetic oil 5 cSt	For starting and flight -40°C≤ OAT ≤ +50°C	Nyco/ Tubonycoil 640	O-154	MIL.PRF-23699G		
Mineral oil 12 cSt	For starting -25°C≤ OAT For starting and flight OAT ≤ +30°C	Total / aerogear 1032	O-155	MIL.PRF 6086 grade M	DTD.581 C OEP.70	AIR 3525

For further details refer to approved RFM

6.3.4 Hydraulic fluids MIL-PRF-83282 or MIL-PRF-87257

7. Fluid capacities

7.1 Fuel

Max usable fuel capacity: 1440 litres
Unusable fuel: 9.9 litres

7.2 Oil

Engine (each): 5.8 litres
MGB: 24 litres
TGB: 0.5 litres

Hydraulic system:
Left circuit: 5.1 litres
Right circuit: 5.3 litres

8. Air Speed Limitations

$V_{NE\ PWR\ ON}$ = 170 KIAS up to 5000 ft PA

For reduction of V_{NE} with altitude refer to approved RFM

$V_{NE\ OEI} = V_{NE\ PWR\ OFF} = V_{NE\ PWR\ ON}$ - 35 KIAS

For other speed limitations refer to approved RFM

9. Rotor Speed Limitations

Power on:

NR regulated range AEO	96 - 105.3 %	(308.7 – 338.6 rpm)
Reference	100.0 %	(321.6 rpm)
Maximum CT	107.8 %	(346.7 rpm)
Minimum CT AEO	92.0 %	(295.9 rpm)
Minimum CT OEI	95.5 %	(307.1 rpm)
Minimum transient	83.0 %	(266.9 rpm)

Power off:

Maximum transient	117.0 %	(376.3 rpm)
Maximum CT	109.8 %	(353.1 rpm)
Minimum CT	92.0 %	(295.9 rpm)
Minimum transient	83.0 %	(266.9 rpm)

10. Maximum Operating Altitude and Temperature

10.1 Altitude	Flight altitude -1500 ft to 20000 ft PA
	
	Take-off and landing altitude:
	• Minimum: -1500 ft PA and -4600ft DA
	• Maximum
	  ○ Category B: 13000 ft DA
	  ○ Category A clear area: 12500 ft DA

10.2 Temperature	-20°C to ISA+37°C limited to +50°C
11. Operating Limitations	VFR day and night and IFR in non-icing conditions Flight in falling and blowing snow without inlet barrier filter installed is prohibited
12. Maximum Mass	• in-flight: 6050 kg • on-ground: 6100 kg
13. Centre of Gravity Range	Longitudinal C.G. limits maximum forward limit: 5092 mm aft of DP at 5300 kg 5130 mm aft of DP at 6050 kg maximum rearward limit: 5390 mm aft of DP at 4500 kg 5287 mm aft of DP at 6050 kg Lateral C.G Limits maximum deviation on right / left: 65 mm at 5500 kg 20 mm at 6050 kg For detailed data refer to approved RFM
14. Datum	Longitudinal: the datum plane (STA 0) is located at 5 217 mm forward of the main rotor head centre Lateral: fuselage symmetry plane
15. Levelling Means	Levelling reference marking on upper deck on LH side near to MGB between frames 3 and 4
16. Minimum Flight Crew	VFR - one pilot (right seat) IFR - one pilot (right seat)
17. Maximum Number of People on Board	14 (including Flight Crew)
18. Passenger Emergency Exit	6 exits, of which are - 1 exit on each side of the cockpit - 2 exits on each side of the passenger cabin (see Note 4.)

19. Maximum Baggage/ Cargo Loads

Cargo floor Max load: 300 kg
(330 kg with the optional cargo extension installed and with mandatory approved restraint nets)

Cargo floor Max unit load: 300 kg/m²

For complementary limitations and specific loading conditions refer to approved RFM

20. Rotor Blade Control Movement

For rigging information refer to Maintenance Manual

21. Auxiliary Power Unit (APU)

n/a

22. Life-limited Parts

Refer to approved ALS

23. Wheels and Tyres

	wheels	tyres
nose	C20727100	5.00-5 / 8 PR with P/N 021-310-0
main	C20781200	17,5x5,75-8 / 12 PR with P/N 178K23-5

IV. Operating and Service Instructions

1. Flight Manual

e-RFM:
- data file(s):
  AIRCREW H160-000 dated 25 June 2020 (approved by EASA on 01 July 2020, or later approved versions)
- software applications:
  - HCrew v1.0.0, approved by EASA on 01 July 2020, or subsequent approved versions
  - H160 Flight Perfo v3.0.0, approved by EASA on 01 July 2020, or subsequent approved versions

For authorised e-RFM host platforms and installation information refer to “H160 c-RFM Installation Guide”, Airbus Helicopters document ref. TN U000A1570E01 issue E, or later revisions.
The use of e-RFM software applications on other host platforms than those specified in the above document is not allowed.

Paper format RFM:
ROTORCRAFT FLIGHT MANUAL H160-B, first issue dated 25 June 2020, approved by EASA on 01 July 2020, or later approved revisions

2. Maintenance Manual

- Airworthiness Limitations Section H160-B, issue dated 15 June 2020, Revision 000, approved by EASA on 01 July 2020, or later approved revisions

- Maintenance Servicing Manual H160 and Aircraft Maintenance Manual H160, as published by Airbus Helicopters

3.	Structural Repair Manual	Structural Repair Manual H160, as published by Airbus Helicopters
4.	Weight and Balance Manual	Section 6 of Complementary RFM, as published by Airbus Helicopters
5.	Illustrated Parts Catalogue	Illustrated Parts Catalogue H160, as published by Airbus Helicopters
6.	Miscellaneous Manuals	N/A
7.	Service Letters and Service Bulletins	Safety Information Notices, Information Notices, Alert Service Bulletins, Service Bulletins, Repair Design Approval Sheets H160, as published by Airbus Helicopters
8.	Required Equipment	As per compliance with Certification Basis and in accordance with Type Design Definition. Refer to approved RFM.

V. Notes

1. Manufacturer's eligible serial numbers: s/n 1002 and subsequent.
2. The certified optional installations are each approved independently of the basic helicopter and are part of the relevant approved Flight Manual.
3. The H160-B is certified for ditching with the optional installations and operating procedures as defined in approved RFM.
4. Passenger Emergency Exits:
   The Sliding Door Jettisonable Window, which is one of the 2 separate exits on each side of the passenger cabin, has been demonstrated to be equivalent to two Type IV emergency exits as specified in CS29.807(a)(4) (ESF D-19 refers).
5. Halon replacement applicability in reference to Regulation EC No. 1005 / 2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete ozone layer referred as Ozone Regulation is recorded in CRI A-04.
6. The H160-B has been demonstrated compliant with Certification Specifications for Airborne Communications Navigation and Surveillance, CS-ACNS initial issue, dated 17 December 2013, taking into account Deviation DEV F-25 to CS ACNS.D.ELS.045 and CS ACNS.D.ADSB.105 “ADS-B Out Extended Squitter & ELS installation with T3CAS Multifunction Transponder”
7. The APU mode approved at engine level is not approved at aircraft level.

SECTION 2: OPERATIONAL SUITABILITY DATA (OSD)

Compliance with the OSD certification basis specified in point 7. of SECTION 1 above hasn't been demonstrated for the MMEL and SIM Data OSD elements.
In accordance with the provisions of Part 21.A.21 (b) of Commission Regulation (EU) No. 748/2012, as amended by Commission Delegated Regulation (EU) No. 2019/897, this compliance must be demonstrated by Airbus Helicopters before the date at which those OSD are to be actually used.

The OSD elements listed below are approved by the European Union Aviation Safety Agency as per Commission Regulation (EU) 748/2012, as amended by Commission Delegated Regulation (EU) No 2019/897.

II.1 MMEL

reserved

II.2 Flight Crew Data

H160 EASA Operational Suitability Data (OSD) - Flight Crew Data (FCD), Normal Revision 0, Date 20-26, or later EASA approved revisions

II.3 SIM Data

reserved

II.4 Maintenance Certifying Staff Data

reserved

I.5 *Cabin Crew Data*

not applicable

SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

AEO	All Engines Operative	No.	Number
ALS	Airworthiness Limitations Section	OEI	One Engine Inoperative
APU	Auxiliary Power Unit	OSD	Operational Suitability Data
CT	Continuous	P/N	Part Number
C.G.	Centre of Gravity	PA	Pressure Altitude
CRI	Certification Review Item	PWR	Power
DA	Density Altitude	ref.	Reference
DEV	Deviation	RFM	Rotorcraft Flight Manual
DP	Datum Point	s/n	Serial Number
e-RFM	Electronic RFM	SC	Special Condition
ESF	Equivalent Safety Finding	Sec	Seconds
FCD	Flight Crew Data	STA	Station
HIRF	High Intensity Radiated Field	TGB	Tail Gearbox
IFR	Instrument Flight Rules	TC	Type Certificate
KIAS	Knots Indicated Air Speed	TCDS	Type Certificate Data Sheet
Max	Maximum	TCDSN	Type Certificate Data Sheet for Noise
MCP	Maximum Continuous Power	TOT	Turbine Outlet Temperature
MGB	Main Gearbox	VFR	Visual Flight Rules
min	Minute	V_{NE}	Never Exceed Speed
MMEL	Master Minimum Equipment List		

II. Type Certificate Holder Record

II.1 Type Certificate Holder	**Period**
Airbus Helicopters Aéroport International Marseille – Provence 13725 Marignane CEDEX, France	From 01 July 2020

III. Change Record

Issue	**Date**	**Changes**	**TC issue**
Issue 1	01 July 2020	Initial issue of EASA TCDS	Initial Issue, 01 July 2020
Issue 2	05 March 2021	SECTION 1: - II. 4.: DEV E-34 “CS 29.965 (d) - Fuel Tank Test – Slosh and Vibration” removed - II. 5.: ESF E-31 “CS 29.1193 (e) (3) - Flight and Ground Conditions for Cowlings Fire Testing” removed - III. 1.: Type Design Definition document references updated - III. 5.3.1.: reference to Note 7. added - V.: Note 7. added SECTION 2: - Information regarding OSD elements pending approval updated and information on approved OSD elements added - II.2: Flight Crew Data reference added SECTION: ADMINISTRATIVE - I.: APU acronym added	---

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