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	1 July 2020

II. Certification Basis

1.	Reference Date for determining the applicable requirements	1 November 2016

2. Airworthiness Requirements

- Certification Specifications for Large Rotorcraft, CS-29 Amdt. 3, dated 11 December 2012 except for the following:
- 29.917, 29.927, and 29.1585 of CS-29 Amdt. 5, dated 14 June 2018;
- 29.865 of CS-29 Amdt. 8, dated 24 June 2020 for external loads.

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 -	29.735 (c)(2) - Electric Brake Slope Landing
DEV D-23 -	29.865 (a), 29.1301 (d), 29.1309 (a), (b) - COLLINS AEROSPACE 'Population 2' Hoist System Installation. See Note 8.

5. Equivalent Safety Findings

ESF D-15 -	29.807 (c) - Passenger emergency exits / other than side-of-fuselage
ESF D-16 -	29.807 (d)(2) and (d)(3) - Ditching emergency exit for passengers
ESF D-17 -	29.855 - Fires in cargo and baggage compartments
ESF D-19 -	29.807 (a)(4) - Passenger emergency exits
ESF D-22 -	29.807 (c) - Use of flight crew emergency exits for passenger evacuation with the rotorcraft on its side. See Note 9.
ESF E-07 -	29.1203 (d) - Fire detection electrical circuit testability
ESF E-28 -	29.1145 - Ignition Switches
ESF E-29 -	29.1195 - Multipurpose Fire Extinguishing System
ESF E-35 -	29.1191 - Backside Fire Ignition – except for configurations where direct compliance with 29.1191 was demonstrated. See Note 10.
ESF F-03 -	29.1305, 29.1351, 29.1435 - Part time display of vehicle parameters

ESF F-04 - 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 - 29.1305, 29.1309, 29.1525, 29.1549 - Engine Training Mode

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

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

6. Environmental Protection Requirements

6.1 Noise Requirements	See TCDSN No. EASA.R.516
6.2 Emission Requirements	Chapter 2 of Part II of Volume II, Third Edition (Amdt. 8) of ICAO Annex 16 to the Chicago Convention (as implemented in CS-34, Amdt. 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 2 December 2014

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 20 sec transient	108%	46 550 (105.5%)	934
Take-off / 30-min AEO	100% up to V_Y+10 KIAS 93.7% above V_Y+ 30 kts	45 910 (104.0%)	912
AEO-MCP	93.6%	45 470 (103.0%)	886
OEI (30 sec)	145% (72.5% at output level)	47 590 (107.8%)	991
OEI (2 min)	127.5% (63.8% at output level)	46 620 (105.6%)	957
OEI CT	112.1% (56.0% at output level)	46 130 (104.5%)	914

5.3.2 Other Engine and Transmission Torque Limits

Refer to approved RFM

6. Fluids

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 authorised fuels refer to approved RFM

6.2 Additives — Refer to approved RFM

6.3 Oil — Refer to approved RFM

6.3.1 Engine lubricants

Type of oil	NATO code	Specifications				Class	Approved oil brands
		France	USA		UK		
			Military	Civil			
RECOMMENDED 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	- Aero Shell Turbine Oil 500 - Castrol 5000 - Mobil Jet Oil II - Total Aeroturbine 535 - Total Preslia SE Jet - Turbonycoil 600
	O-152	-		-	-	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 oil brands (other products are excluded)	Specifications			
			NATO	US	UK	FR
Mineral 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 12 cSt		Total / Aerogear 1032				

Synthetic 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 5 cSt	For starting and flight -40°C≤ OAT ≤+50°C	Nyco/ Tubonycoil 640	O-154	MIL-PRF-23699G		
Mineral 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: 1 440 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 5 000 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	96.0 - 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 -1 500 ft to +20 000 ft PA
Take-off and landing altitude:
- Minimum: -1 500 ft PA and -4 600ft DA

- Maximum
  - Category B: 13 000 ft DA
  - Category A clear area: 12 500 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: 6 050 kg
- on-ground: 6 100 kg

13. Centre of Gravity Range:
Longitudinal C.G. limits
maximum forward limit:
5 092 mm aft of DP at 5 300 kg
5 130 mm aft of DP at 6 050 kg
maximum rearward limit:
5 390 mm aft of DP at 4 500 kg
5 287 mm aft of DP at 6 050 kg

Lateral C.G Limits
maximum deviation on right / left:
65 mm at 5 500 kg
20 mm at 6 050 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 (EASA-approved 1 July 2020, or later approved versions) - software applications: • HCrew v1.0.0, EASA-approved 1 July 2020, or subsequent approved versions • H160 Flight Perfo v3.0.0, EASA-approved 1 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, EASA-approved 1 July 2020, or later approved revisions
2.	Maintenance Manual	- Airworthiness Limitations Section H160-B, issue dated 15 June 2020, Revision 000, EASA-approved 1 July 2020, or later approved revisions - Maintenance Servicing Manual H160 and Aircraft Maintenance Manual H160.
3.	Structural Repair Manual	Structural Repair Manual H160
4.	Weight and Balance Manual	Section 6 of Complementary RFM
5.	Illustrated Parts Catalogue	Illustrated Parts Catalogue H160
6.	Miscellaneous Manuals	none
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 RFM.
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 29.807(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 sections A, B and D 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.
8. DEV D-23 is applicable only to the following options:
   Single Hoist pop 2 including the following: ECP_H160.S01129, ECP_H160.S01130, ECP_H160.S01132, ECP_H160.S01133, ECP_H160.S01134, ECP_H160.S01135, ECP_H160.S01136, ECP_H160.S01137, ECP_H160.S01138, ECP_H160.S01141, ECP_H160.S01259, ECP_H160.S03563, ECP_H160.S03895, ECP_H160.S04278, ECP_H160.S04279, ECP_H160.S04390, ECP_H160.S04553, ECP_H160.S04998, ECP_H160.S05086, ECP_H160.S05163, and ECP_H160.S05195
9. ESF D-22 is applicable only to the following configurations:
   Cabin Configurations for Public Service Missions including the following:
   ECP_H160.S0473, ECP_H160.S04750, ECP_H160.S04751, ECP_H160.S04752, ECP_H160.S04878, ECP_H160.S04881, and ECP_H160.S05060.
10. For the following, direct compliance with CS 29.1191 was demonstrated without ESF E-35:
    - Modification of torque-tube to improve fire protection, ECP_H160.S04920;
    - Improvement of engine deck fire protection ECP_H160.S05062.

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SECTION 2: OPERATIONAL SUITABILITY DATA (OSD)

For the OSD certification basis refer to point II.7. of SECTION 1.

The OSD elements listed below are approved by the European Union Aviation Safety Agency as per Commission Regulation (EU) 748/2012.

II.1 MMEL

H160-B Master Minimum Equipment List, in paper and e-MMEL formats, package of data files ref. 1882_23062021, or later approved revisions.
The software application for e-MMEL is HCrew. For information on approved versions of HCrew and authorised host platforms refer to point IV.1. of SECTION 1.

II.2 Flight Crew Data

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

II.3 SIM Data

H160-B Simulation Data, doc. ref. U150A0025E01_TN issue A, or later approved revisions.

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 1 July 2020

III. Change Record

Issue	**Date**	**Changes**	**TC issue**
Issue 1	1 Jul 2020	Initial issue of EASA TCDS	Initial Issue, 1 July 2020
Issue 2	5 Mar 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	---

Issue	Date	Changes	TC issue
Issue 3	15 Oct 2021	SECTION 1: - II.7.4: Empty section removed, - III.5.3.1: unit KIAS amended, - III.9.: NR range amended. SECTION 2: - Information regarding OSD elements pending approval removed, introduction modified, - Approved MMEL and SIM Data OSD elements added, - Empty sections for Maintenance Certifying Staff Data and Cabin Crew Data OSD elements removed.	---
Issue 4	2 Feb 2023	SECTION 1, II.: - CS 29.865 of CS-29 Amdt. 8 added, - DEV D-23 and reference to Note 8 added, - ESF D-22 and reference to Note 9 added, - Reference to Note 10 added to ESF-E-35. SECTION 1, III, 6.1: text reduced to TCDSN reference. SECTION 1, V.: - Relevant sections of CS-ACNS added to Note 6, - Notes 8 to 10 added. All sections: editorial alignments	---

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