

型号认可证数据单
THE VALIDATION DATA SHEET

编号/No.: VTC0359E

版次/Revision: 0

型号/Type:

HF120

批准人/Approved by:

徐超群

职务/Title: Director General of CAAC-AAD

日期/Date: 2019-05-18

本数据单是型号认可证（编号：VTC0359E）的组成部分，它规定了符合中国民用航空局的适航要求所颁发此型号认可证的产品状态和限制。

This data sheet, which is a part of Validation Type Certificate (No: VTC0359E), prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Chinese Civil Aviation Regulation.

型号认可证持有人/Validation of Type Certificate Holder:

GE Honda Aero Engines

9050 Centre Pointe Dr

Suite 200

West Chester, OH 45069

有效页清单/List of effective pages :

页数/ Pages	1	2	3	4	5	6	7	8	9	10					
版次/Revision	0	0	0	0	0	0	0	0	0	0					

第1部分 概述

SECTION 1 GENERAL

1. CAAC认可数据单和型号合格证数据单

CAAC Validation Data Sheet and Type Certificate Data Sheet

	中国民用航空局认可数据单号、版次和颁发日期 CAAC Validation Data Sheet Number, Revision and issuance date	型号合格证数据单号、版次和颁发日期 Type Certificate Data Sheet Number, Revision and issuance date
当前 Current	VTC0359E, 版次 0, 2019 年 5 月 18 日 VTC0359E, Revision 0, May 18, 2019	FAA TCDS No. E00085EN, 第 1 版, 2015 年 6 月 25 日 FAA TCDS No. E00085EN, Revision 1, June 25, 2015
历史 History	无/NA	无/NA

2. 类别/Category: 航空发动机/Aeroengine
3. 认可当局/Validation Authority: 中国民用航空局/CAAC
审定当局/Certifying Authority: 美国联邦航空局/FAA
4. 型号合格证持有人/Type Certificate Holder: GE Honda Aero Engines
9050 Centre Pointe Dr
Suite 200
West Chester, OH 45069
5. 双发延程飞行/ETOPS: 不适用 / NA
6. CAAC专用要求/CAAC Special Requirements: 满足中国3号燃油（GB6537-2006）的要求。
Compliance with requirement of P.R.China JET Fuel
No.3 (GB6537-2006)

第2部分 数据单

SECTION 2 DATA SHEET

I. 型号/MODELS	HF120
类型/TYPE 	HF120 发动机是具有双转子、中涵道比的涡轮风扇发动机，其具有一级风扇、两级低压压气机、一级离心式高压压气机、一个回流式环形燃烧室、单级高压涡轮、两级低压涡轮、瓣状排气混合器和全权数字发动机控制（FADEC）。 The HF120 engine is a dual rotor, medium bypass ratio turbofan with a single stage fan, 2-stage low pressure compressor, single stage radial flow high pressure compressor, single annular reverse flow combustor, single stage high pressure turbine, 2-stage low pressure turbine, lobed exhaust mixer, and a full authority digital engine control (FADEC).
额定值 （见注 5） RATINGS (See NOTE 5) 静止状态下，海平面最大连续推力，磅 Maximum continuous at sea level, static thrust, lb 静止状态下，海平面起飞推力，磅 Takeoff (5 min, see NOTE 8) at sea level, static thrust, lb 起飞和最大连续的平台额定环境温度 Flat rating ambient temperature for Takeoff and Maximum Continuous	2057 2095 77° F / 25° C

零件 / 构型 COMPONENTS / CONFIGURATIONS 燃油泵计量组件 / Fuel Pump Metering Unit 引射流/ Motive Flow (See NOTE 10) 全权数字控制 (FADEC) Full Authority Digital Control (FADEC) 硬件/ Hardware FADEC 软件操作系统/ FADEC Software OS FADEC 软件应用系统/ FADEC Software AS 点火系统 / IGNITION SYSTEM 一个点火单元 / One ignition unit 两个点火嘴 / Two igniter plugs	零件和发动机构型信息，参考批准的部件清单： For information regarding components and engine configuration, refer to the approved parts list: HF120-H1A 24100-Q0A 34100-Q0A 34211-Q0A 34221-Q0A 31311-Q0A 31111-Q0A
主要尺寸 (英寸) PRINCIPLE DIMENSIONS (in) 长度 (风扇机匣前法兰至后风扇机匣后法兰) Length (fan duct front flange to aft end of rear fan duct) 宽度(最大轮廓) / Width (Maximum Envelope) 高度(最大轮廓) / Height (Maximum Envelope) 干重 (磅) / WEIGHT (DRY) (lbs) 包括基本发动机、基本附件以及制造商发动机规范上列出的可选设备 Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications. 重心 (英寸) (发动机本体) CENTER OF GRAVITY LOCATIONS (in) (Engine Only) 站位 (轴向) / Station (axial) 水平线 /Waterline 纵剖线 /Buttline	59.5 in 25.8 in 30.5 in 466 lbs 207.6 in 99.9 in 97.5 in

燃油 FUEL

有关燃油和添加剂的详细信息，参考HF120服务通告73-0001及其最新版本。该服务通告列出了符合GE航空规范D50TF2 (A级和C级)的可用燃油及添加剂。

Refer to HF120 Service Bulletin 73-0001 and its latest revision for detailed information

滑油 OIL

pertaining to fuels and additives. This Service Bulletin lists the eligible fuels and additives conforming to GE Aviation Specification D50TF2 (Class A and C only).

有关II型滑油的详细信息，参考HF120服务通告79-0001及其最新版本。该服务通告列出了符合GE航空规范D50TF1的批准滑油。

Refer to HF120 Service Bulletin 79-0001 and its latest revision for detailed information pertaining to Type 2 oils. This Service Bulletin lists the approved oils conforming to GE Aviation Specification D50TF1.

HF120审定基础**CERTIFICATION BASIS****HF120**

- 14 CFR 第33部，1965年2月1日生效，包括修正案 33-1 至33-30。
14 CFR Part 33, effective February 1, 1965, including Amendments 33-1 through 33-30.
- 燃油排泄和排气排出物， 14 CFR 第34部，5A修正案，2013年10月23日生效，和 40 CFR第87部， 2012年12月31日生效。见注12。
Fuel Venting and Exhaust Emissions Standards, 14 CFR Part 34, Amendment 5A, effective October 23, 2013, and 40 CFR Part 87, effective December 31, 2012. See note 12.
- 等效安全结论/ Equivalent Level of Safety (ELOS) Findings:
ELOS No. TC2596EN-E-P-1 to 14 CFR § 21.21 and 33.68(b)

型号合格证 E00085EN / TYPE CERTIFICATE E00085EN

型号	申请日期	颁发/修正
MODEL	APPLICATION DATE	ISSUED/ AMENDED
HF120	2007年2月27日/ Feb. 27, 2007	2013年12月13日/ Dec. 13, 2013

生产基础**PRODUCTION BASIS**

无/ None

注释/ NOTE

注释 1/ NOTE 1.

最大允许的发动机转子转速 / MAXIMUM PERMISSIBLE ENGINE ROTOR SPEEDS

低压转子 (N1) / Low pressure rotor (N1) 19,055 转/分钟 (100.0%) / RPM (100.0%)

高压转子 (N2) / High pressure rotor (N2) 49,200 转/分钟 (100.9%) / RPM (100.9%)*

* 注: 100% N2 转速是 48,777 转/分钟。 / Note: 100 percent N2 is 48,777 RPM

注释 2/ NOTE 2.

最高允许的温度 / MAXIMU PERMISSIBLE TEMPERATURES

综合涡轮间温度 (ITT) / Synthesized Interstage Turbine Temperature (ITT)	
起飞, 5 分钟 (见注 8) / Takeoff, 5 min (see NOTE 8)	1580°F (860°C)*
最大连续/Maximum Continuous	1569°F (854°C)
* 2 分钟最大瞬态/ 2 minutes maximum transient	1625°F (885°C)
地面起动 (手动或自动) / Ground Starts (manual or auto)	1033°F (556°C)
空中起动 (手动或自动) / Inflight Starts (manual or auto)	1033°F (556°C)
滑油温度限制 / Oil Temperature limits	
连续 / Continuous	290°F (143°C)
瞬态 (15 分钟) / Transient (15 minutes)	330°F (165°C)

注释 3/ NOTE 3.

燃油和滑油的压力限制 / FUEL AND OIL PRESSURE LIMITS

<u>发动机燃油泵进口压力限制 / FUEL PRESSURE LIMITS AT THE ENGINE PUMP INLET</u> GHAE HF120 发动机安装手册 GEK 112115 的第 0.4.3.2 部分, 规定了最低和最高的燃油压力。 See section 0.4.3.2 of GHAE HF120 Engine Installation Manual, GEK 112115, for definition of minimum and maximum fuel pressures.
<u>滑油压力限制 / OIL PRESSURE LIMITS</u> GHAE HF120 发动机运行手册 GEK 112116 的图 8-3, 规定了最低和最高的滑油压力。 See Figure 8-3 of GHAE HF120 Operating Instructions, GEK 112116, for definition of minimum and maximum oil pressures.

注释 4/ NOTE 4.

附件驱动特性/ ACCESSORY DRIVE CHARACTERISTICS

附件 Accessory	面对齿轮箱 安装盘的转 向 Rotation Facing Gearbox Pad	相对核心机 的传动比 Gear Ratio To Core Rotor	最大稳态驱 动轴转速 转/分钟 Maximum Steady State Drive Shaft	最大重量 磅 Maximum Weight LB	最大悬臂力 矩 英寸-磅 Maximum Overhung Moment	剪切力矩 英寸-磅 Shear Torque IN-LB	最大连续扭 矩 英寸-磅 Maximum Continuous
							见注释 B,C Maximum

			RPM		IN-LB		Torque IN-LB See Comments B,C
起动机/发电机 (SG) Starter / Generator (SG)	顺时针方向 CW	0.2511	12,354	45	265	1600	222

注释 / Comments:

- A. 最大核心机转速为 49,200 转/分钟。 / Maximum core engine speed is 49,200 rpm.
- B. 起动发电机安装盘最大连续超扭扭矩为 302.5 英寸-磅, 在 6001 转/分钟时, 5 分钟 (28.8 马力)。 / Maximum continuous overload torque for the SG pad is 302.5 in-lb at 6001 rpm for 5 minutes (28.8 hp).
- C. 起动发电机安装盘最大瞬态超扭扭矩为 360.3 英寸-磅, 在 6001 转/分钟时, 5 秒钟 (34.3 马力)。 / Maximum transient overload torque for the SG pad is 360.3 in-lb at 6001 rpm for 5 seconds (34.3 hp).
- D. 起动发电机安装盘的最大功率提取为 24.2 马力。 / Maximum horsepower extraction at the SG pad is 24.2 hp.

注释 5/ NOTE 5.

发动机额定值 / ENGINE RATINGS

发动机额定值基于测试台的性能校准试验 (发动机能力), 关闭 EECU 功率管理功能。
有关安装推力额定值, 见注 11。 / Engine ratings are based on calibrated test stand performance operating in test cell mode (engine capabilities), which disables the EECU power management functions. For installed thrust ratings see note 11:

- 海平面静态, 标准压力(14.696 psia), 59°F / Sea level static, standard pressure (14.696 psia), 59°F
- 无用户引气或功率提取 / No customer bleed or customer horsepower extraction
- 理想进气道, 100%冲压恢复 / Ideal inlet, 100% ram recovery
- 燃油低位热值 18576 BTU/# / Fuel lower heating value of 18576 BTU/#
- 0%湿度 / 0% humidity
- 引射流功率提取为 0 / Horsepower extraction from motive flow set to zero

注释 6/ NOTE 6.

最大的允许引气/ MAXIMUM PERMISSIBLE BLEED AIR EXTRACTION

发动机引气提取限制 (见注 A) / Engine Bleed Air Extraction Limits (See Comment A)

	压力高度, 英尺 Pressure Altitude, feet	压气机出口引气流量, 磅/分钟(占 W25 的百分比) CDP Bleed Flow, lbm/min (% of W25)
高压引气 HP Bleed	-1000	41.0 (17.0%)
	-1000 to 46,000	在-1000 到 46000 英尺之间线性变化 Linear Transition between -1000 feet and 46,000 feet altitude
	46,000	22.2 (15.0%)
	压力高度, 英尺 Pressure Altitude,	风扇引气流量, 占 W2 的百分比 Fan Bleed Flow, % of W2

	feet	
风扇引气 Fan Bleed	全部高度 All altitudes	1.0%

高于 26000 英尺的高压引气提取限制（见注 A）/ HP Bleed Air Extraction Limits Above 26,000 feet (See Comment A)

	压力高度，英尺 Pressure Altitude, feet	压气机出口引气流量，磅/分钟 CDP Bleed Flow, lbm/min
高压引气 HP Bleed	26,000	17.1 (10.0%)
	26,000 to 46,000	在 26000 到 46000 英尺之间线性变化 Linear Transition between 26000 feet and 46,000 feet altitude
	46,000	12.8 (12.0%)

核心机转速低于 26700 转/分钟时高压引气提取限制（见注 A、B）/ HP Bleed Air Extraction Limits Below 26,700 RPM Core Speed (See Comments A,B)

	核心机转速，转/分钟 Core Speed, RPM	压气机出口引气流量，磅/分钟(占 W25 的百分比) CDP Bleed Flow, lbm/min (% of W25)
高压引气 HP Bleed	23,900	36.0 (19.0%)
	23,900 to 26,700	在核心机转速 23900 到 26700 转/分钟之间线性变化 Linear Transition between 23,900 RPM and 26,700 RPM Core Speed
	26,700	41.0 (19.0%)

注释 / Comments:

A. 具体引气提取限制详见 GHAE HF120 安装手册 GEK 112115 / Bleed extraction limit details are described in GHAE HF120 Installation Manual GEK 112115

B. 低于 26700 转/分钟的引气提取可用于地面慢车状态下环境运行包线内的所有区域/
Bleed extraction below 26,700 RPM applies to all regions of the environmental operating envelope at ground idle.

注释 7/ NOTE 7.

寿命限制 / LIFE LIMITS

HF120-H1A 关键旋转件的寿命限制参见 GHAE HF120 航线维护手册 GEK 112112-H1 的第五章。 / Life limits established for critical rotating components for: HF120-H1A are published in Chapter 5 of the GHAE HF120 Line Maintenance Manual, GEK 112112-H1.

注释 8/ NOTE 8.

起飞时间限制 / TAKEOFF TIME LIMIT

发动机意外情况下，正常的 5 分钟起飞限制可以延长至 10 分钟。 / The normal 5-minute takeoff time limit may be extended to 10 minutes for engine out contingency.

注释 9/ NOTE 9.

限时派遣标准/ TIME LIMITED DISPATCH CRITERIA

发动机控制系统派遣与维修要求的标准，在以下文件中规定：HF120-H1A FADEC 控制

系统汇总文件 GEK 112118-H1A、GHAE HF120 航线维护手册 GEK 112112-H1 的适航限制章节。后者定义了不同的构型和最大运行间隔。

Criteria pertaining to the dispatch and maintenance requirements for the engine control systems are specified in the HF120-H1A FADEC Control System Summary Document, GEK 112118-H1A and the Airworthiness Limitations Section of the GHAE HF120 Line Maintenance Manual, GEK 112112-H1, which defines the various configurations and maximum operating intervals.

注释 10/ NOTE 10.**引射流 / MOTIVE FLOW**

由燃油泵计量组件引射流接口引出的燃油，有可能被提取到飞机燃油系统的驱动喷射或涡轮泵。详见 GHAE HF120 安装手册 GEK 112115 第 7.2.8 章节的示意图。

Fuel from the motive flow port on the FPMU may be extracted to the drive jet or turbine pumps in the airplane fuel system. See paragraph 7.2.8 of the GHAE HF120 Installation Manual GEK 112115 for flow characteristics.

注释 11/ NOTE 11.**基本型号和后缀 / BASIC MODEL NUMBER AND SUFFIX**

所列型号具有以下基本特征:

HF120 – 基本型

The following models incorporate the following general characteristics:

HF120 – base model

发动机名牌上的型号后缀用于标识，根据飞机安装需求造成的发动机构型、安装零件或者减推力设置的微小差异。例如：HF120-xnxGxx。发动机基本型的后缀汇总如下：

A suffix may be added to the basic engine model number on the engine name plate to identify minor variations in the engine configuration, installation components or de-rated thrust peculiar to the aircraft installation requirements. For example: HF120-xnxGxx. Engines that have suffix to the base model are summarized below:

1. HF120-H1A–除为适应 HA420 的功率管理而减小额定推力外，其他与 HF120 相同。除以下注释外，全部限制值与基本型相同。因适应不同飞机的安装位置（左侧、右侧）和/或附加/选装设备，而存在的硬件微小差异。

海平面最大连续静推力，磅：1922

海平面静态起飞推力（5 分钟，见注 8），磅：2037

1. HF120-H1A– Same as HF120 except reduced thrust ratings to accommodate HA420 power management. All limitations identical except as noted below. There are minor hardware differences to accommodate different aircraft installation positions (left hand, right hand) and/or additional/optional equipment.

Maximum continuous at sea level, static thrust, lb: 1922

Takeoff (5 min. see NOTE 8) at sea level, static thrust, lb.: 2037

注释 12/ NOTE 12.**排放标准 / EMISSIONS STANDARDS**

HF120H1A 符合 2013 年 10 月 23 日生效的 14 CFR 第 34 部 5A 修正案以及 2012 年 12 月 31 日生效的 40 CFR 第 87 部的排放标准。

The following emission standards promulgated in 14 CFR Part 34, Amendment 5A, effective October 23, 2013, and 40 CFR Part 87, effective December 31, 2012 have been complied with for : HF120H1A

燃油排泄标准：14 CFR 第 34.10(b)条与 34.11 条；及 40 CFR 第 87.10(b)条与 87.11 条。

Fuel Venting Emissions Standards: 14 CFR §§ 34.10(b) and 34.11; in addition 40 CFR §§ 87.10(b) and 87.11.

发烟指数 (SN) 排放标准: 14 CFR 第 34.23(a)(1)条; 及 40 CFR 第 87.23(c)(1)条。

Smoke Number (SN) Emission Standards: 14 CFR § 34.23(a)(1); in addition, 40 CFR § 87.23(c)(1).

除了 FAA 根据本 TCDS 所列审定要求给出的符合性结论外, 发动机制造商声明, 满足 ICAO 附件 16, 第 II 卷第三版, 第 II 部分, 第 2 章 2.2.2 中发烟指数以及第 II 部分第 2 章中燃油排泄的标准。

In addition to the FAA's finding of compliance based on the certification requirements defined in this TCDS, the engine manufacturer has declared that the ICAO emissions standards identified in Annex 16, Volume II, Third Edition, Part II, Chapter 2, Section 2.2.2 for SN, and Part II Chapter 2 for fuel venting have also been demonstrated.

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