

型号合格证数据单
TYPE CERTIFICATE DATA SHEET

编号/No: TC0076E

版次/Revision: 0

型别/Model:

AEC2.0L

批准人/Approved By:



职务/Title:

日期/date: 2023-07-05

本数据单是型号合格证（编号：TC0076E）的组成部分，它规定了获得该型号合格证的产品满足中国民用航空规章相关适航要求的条件和限制。

This data sheet, which is part of Type Certificate (No: TC0076E), prescribes condition and limitation under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Chinese Civil Aviation Regulation.

型号合格证持有人/ Type Certificate Holder:

芜湖钻石航空发动机有限公司

芜湖市湾沚区安徽新芜经济开发区钻石路 2 号

WUHU Diamond Aeroengine CO.,LTD

Diamond Road 2, Xinwu Economic Development Zone, Wanzhi district, Wuhu city

第一部分: AEC2.0L 型别技术数据/ SECTION A: Model AEC2.0L TECHNICAL DATA**A I. 产品型别概述/Model General**

产品型别/ Model	类别/ Category	型号合格证申请日期/ Application Date	型号合格证批准日期/ Approval Date
AEC2.0L	发动机/Engine	2019年07月11日/11 July 2019	2023年07月05日/05 July 2023

A II. 生产依据/ Production Basis

型别/Model	生产依据/Production Basis
AEC2.0L	暂无/None

A III. 审定基础/ Certification Basis

型别/Model	审定基础/Certification Basis	
AEC2.0L	适航标准/Airworthiness Standards	CCAR-33R2 航空发动机适航规定 2016年4月17日实施。 / CCAR-33R2 Airworthiness Regulation for Aeroengine, implemented on 17 April 2016.
	专用条件/Special Conditions	- AEC2.0L压燃式活塞发动机压燃点火和重新启动 SC-33-003; - AEC2.0L压燃式活塞发动机燃油高压管路 SC-33-004。 / - Compression ignition and restart of AEC2.0L Compression-ignition Piston Engine, SC-33-003; - High Pressure Fuel Lines of AEC2.0L Compression-ignition Piston Engine, SC-33-004.
	等效安全/ELOS	- 针对CCAR33.45(a)条款的AEC2.0L-IC-1: 燃油 / 空气混合比调定值等效安全; - 针对CCAR33.49(a)条款的AEC2.0L-IC-3: AEC2.0L型号发动机气缸温度控制方法的等效安全。 / - AEC2.0L-IC-1 to CCAR33.45(a):ELOS for Fuel/air Mixture Settings; - AEC2.0L-IC-3 to CCAR33.49(a): ELOS for Cylinder Temperature control method of AEC2.0L engines.
	豁免/Exemption	无/None
	环保要求/Environmental Standards	无 (活塞发动机不要求) /None (not required for piston engines)

A IV. 技术特征和使用限制/Technical Characteristics and Operational Limitations

型别/Model	AEC2.0L
----------	---------

型号设计定义/Type Design definition	AEC2.0L 发动机是直列四缸、四冲程、液冷、压燃式活塞发动机，排量 2.122 升，装有高压共轨缸内直喷系统，涡轮增压器，减速比 1: 1.69 的齿轮箱和电子发动机控制单元（EECU）。型号设计详细定义参见文件 AEC20-TDD-01。/ The AEC2.0L engine is a in-line, 4-cylinder, four stroke, Liquid-cooled, Compression-ignition piston engine, with an displacement of 2.122L, equipped with common rail high pressure direct injection, turbocharger, gearbox with reduction ratio of 1:1.69 and an Electronic Engine Control Unit (EECU). Detailed type design definition see AEC20-TDD-01.	
额定值/Ratings	额外信息见注释 1。/Additional information see note 1.	
起飞功率/Take-off Power	123.5 kW @ 3887 rpm(2300 prop rpm)	
最大连续功率/Max. Continuous Power	123.5 kW @ 3887 rpm(2300 prop rpm)	
工作高度/Operating Altitude		
最大高度/Max. Altitude	5500m	
控制系统/Control System		
控制系统说明/Control System description	AEC2.0L 发动机装有电子发动机控制单元（EECU），软件按照 RTCA DO-178C 的 C 级验证。 发动机控制系统根据 DO-160G 针对雷电保护和电磁干扰进行了测试。已证明的级别在安装手册 AEC20-IM-01 中说明。/ The AEC2.0L engine is equipped with an Electronic Engine Control Unit (EECU). Software verified to level C according to RTCA Document DO-178C. The engine control system has been tested according to DO-160G for lightning protection and magnetic interference. The demonstrated levels are declared in the Installation Manual AEC20-IM-01.	
软硬件号/Part Number of Software and Hardware	EECU 软件: TRJ9015.C.0.07 或后续批准的版本; EECU 硬件: TE9015.A010204 或后续批准的版本。 后续批准的版本将会以服务通告的形式发布。/ EECU Software: TRJ9015.C.0.07 or later approved revisions; EECU Hardware: TE9015.A010204 or later approved revisions. The latest approved version will be published as a Service Bulletin.	
液体（燃油、滑油、冷却液、添加剂）/Fluids(Fuel, Oil, Coolant, Additives)	见运行手册 AEC20-OM-01，额外信息见注释 15。/See Operation Manual AEC20-OM-01 for approved fluids.Additional information see note 15.	
物理特性/Physical Characteristics		
主要尺寸/Principle Dimensions	长度/Length	767mm
	宽度/Width	854mm
	高度/Height	575mm
干重/Dry Weight 不超过/Not to Exceed	180kg	
温度限制/ Temperature Limits	额外信息见注释 2。/Additional information see note 2.	
最低热机滑油温度 /Min. opening up Oil Temperature	50°C(122°F)	

滑油温度（正常操作） /Oil Temperature (normal operation)	50℃-135℃(122°F -275°F)			
最高滑油温度 /Max. Oil Temperature:	135℃(275°F)			
最低起动环境温度 /Min. Ambient Temperature for Starting	-30℃(-22°F)			
最低工作燃油温度 /Min. Fuel Temperature during operation	-30℃(-22°F)			
最低热机冷却液温度 /Min. opening up Cooling Fluid Temperature	60℃(140°F)			
最高冷却液温度 /Max. Cooling Fluid Temperature	105℃(221°F)			
最低热机齿轮箱油温度/ Min. opening up Gearbox Oil Temperature	35℃(95°F)			
最高齿轮箱油温度/Max. Gearbox Oil Temperature	120℃(248°F)			
压力限制/Pressure Limits 额外信息见注释 3。 /Additional information see note 3.				
最低燃油压力（发动机高压泵进口处） /Min. Fuel Pressure (at inlet of HP engine pump)	4 bar (58.02 psi)			
最高燃油压力（发动机高压泵进口处） /Max. Fuel Pressure (at inlet of HP engine pump)	7 bar (101.53 psi)			
慢车条件下最低滑油压力/Min. Oil Pressure at Idle Conditions	1.5bar (21.76 psi)			
最大连续条件下最低滑油压力 /Min. Oil Pressure at Max. Continuous Conditions	2.5bar (36.26 psi)			
最高滑油压力/Max. Oil Pressure	6.5 bar (94.27 psi)			
转速限制/Speed Limits 额外信息见注释 4。 /Additional information see note 4.				
最大发动机超转转速（曲轴转速） /Max. Engine Over-speed (Crankshaft Speed)	4225 rpm (2500 prop rpm)			
起飞转速/Take-off speed	3887 rpm (2300 prop rpm)			
最大连续转速/ Max. continuous speed	3887 rpm (2300 prop rpm)			
附件传动特性/Accessory Drive Characteristics 额外信息见注释 6。 /Additional information see note 6.				
螺旋桨调速器/Propeller Governor	旋转方向/ Rotation	最大转速/ Max. Speed	最大扭矩/ Max. Torque	驱动类型/ Type of Drive
	CCW	2680rpm	40Nm	AND 20010

	CCW=逆时针。 速度显示以 3887 转/分钟的发动机转速为参考。 附件驱动的转动方向是面对驱动器观察的方向。/ CCW = Counter-Clock-Wise. Speed is indicated for a reference engine speed of 3887 rpm. Accessory drive direction of rotation is as viewed facing the drive.
设备/Equipment	详见安装手册AEC20-IM-01, 额外信息见注释9。/Refer to Installation Manual AEC20-IM-01 for details. Additional information see note 9.
部件寿命/Component Life	详见维护手册 AEC20-MM-01, 额外信息见注释 10。/Refer to Maintenance Manual AEC20-MM-01 for details. Additional information see note 10.
安装假设/Installation Assumption	详见安装手册 AEC20-IM-01。/Refer to Installation Manual AEC20-IM-01 for details.
限时运行 (TLO) /Time Limited Operation	该发动机未批准限时运行。在飞机起飞前, 所有发动机系统和设备必须正常工作。任何检测到的发动机系统或设备故障必须在下次飞行前纠正, 特殊说明请参见运行手册 AEC20-OM-01。/The engine is not approved for Time Limited Operation. 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 Operation Manual AEC20-OM-01.

A V. 批准的技术资料/ Approved Technical Documents

型别/Model	技术资料/ Technical Documents		状态/Status
AEC2.0L	安装手册/Installation Manual	AEC20-IM-01	批准/ Approved
	运行手册/Operation Manual	AEC20-OM-01	批准/ Approved
	维护手册/Maintenance Manual	AEC20-MM-01	认可/ Accepted
	维护手册适航限制章节/ Airworthiness Limitations Section of the Maintenance Manual.	AEC20-CD-040104	批准/ Approved
	翻修手册适航限制章节/ Airworthiness Limitations Section of the Overhaul Manual.	AEC20-CD-040105	批准/ Approved
	服务通告及服务信函/Service Bulletins and Service Letters	参见所颁发的相关文件/as issued	/

A VI. 注释/Notes

注释 1/ NOTE 1.

发动机额定功率/Engine Rating

发动机额定功率基于以下条件的校准台架获得:

假设:

1. 符合 ICAO 定义的国际标准大气, 海平面静止状态;
2. 无功率提取。/

Engine Rating is based on calibrated stand performance under the following conditions:

Assumptions:

1. International Standard Atmosphere defined by ICAO, at sea level static condition;
2. No power extraction.

注释 2/ NOTE 2.	额外的温度限制/Additional Temperature Limits 无/None
注释 3/ NOTE 3.	额外的燃油、滑油压力限制/ Additional Fuel and Oil Pressure Limits 无/None
注释 4/ NOTE 4.	额外的转速限制/ Additional Speed Limits 无/None
注释 5/ NOTE 5.	额外的扭矩限制/ Additional Torque Limits 无/None
注释 6/ NOTE 6.	额外的附件传动特性/ Additional Accessory Drive Characteristics 无/None
注释 7/ NOTE 7.	额外的型别特征说明/ Additional Model Characteristics description 无/None
注释 8/ NOTE 8.	额外的设备/ Additional Equipment 无/None
注释 9/ NOTE 9.	兼容的系统组件/Compatible System Assemblies 该发动机被批准使用的螺旋桨和调速器信息见安装手册 AEC20-IM-01, 这一批准不包括对螺旋桨和调速器的批准。/The engines are approved for use with propellers and propeller governors as listed in the Installation Manual AEC20-IM-01. This approval does not include the approval of the propellers and their governors.
注释 10/ NOTE 10.	部件寿命/Parts Life 详见维护手册 AEC20-MM-01。/Refer to Maintenance Manual AEC20-MM-01 for details.
注释 11/ NOTE 11.	防冰或除冰要求/Anti-icing or De-icing Requirements 不适用/Not Applicable
注释 12/ NOTE 12.	制造商的服务通告或其他特殊事项的说明/ Manufacturer's Service Bulletins or other special instructions 无/None
注释 13/ NOTE 13.	适航限制/Airworthiness Limitations CAAC 批准的持续适航文件中的适航限制章节已在维护手册 AEC20-MM-01 中第 04-00-00 “适航限制” 章节发布。/The CAAC approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the Maintenance Manual AEC20-MM-01, chapter 04-00-00 ‘Airworthiness Limitations’.

注释 14/ NOTE 14.**发动机安装/Engine Installation**

AEC2.0L 发动机批准用于 CCAR-23 部正常类飞机, 输出方式为牵引式。/AEC2.0L engines are approved for the installation in CCAR-23 normal category airplanes. The output mode is traction.

注释 15/ NOTE 15.**批准的燃油/Approved Fuel**

AEC2.0L 发动机批准使用喷气燃料 (详见运行手册 AEC20-OM-01), 推荐的最小十六烷值为 43.4 (根据 GB/T 386-2021 确定)。/The AEC2.0L engines are approved for operation with jet fuels (see Operation Manual AEC20-OM-01). A minimum cetane number of 43.4 (determined according to GB/T 386-2021) is recommended.

注释 16/ NOTE 16.**翻修间隔时间/Time Between Overhaul**

推荐的翻修间隔时间(TBO)在维护手册 AEC20-MM-01 中发布。由于 AEC2.0L 发动机翻修手册尚未完成, 直到翻修手册完成并被 CAAC 认可前, 任何装配该发动机的航空器都不具备获得适航证的条件, 并且不允许任何人对发动机开展翻修或者任何形式的深度维护工作。/The recommended Time Between Overhaul (TBO) is published in the Maintenance Manual AEC20-MM-01. Since the Overhaul Manual of AEC2.0L engine is incomplete currently, until the Overhaul Manual is completed and accepted by the CAAC, any aircraft equipped with the engine would not be eligible for airworthiness certification, and no one is allowed to carry out the engine overhauls or any kind of in-depth maintenance work on the engine.

注释 17/ NOTE 17.**EECU 安装要求/ Installation Requirements for EECU**

EECU 严禁安装在指定火区。安装条件在安装手册 AEC20-IM-01 中定义。/The EECU must not be installed in a dedicated fire zone. The installation conditions are defined in the Installation Manual AEC20-IM-01.

注释 18/ NOTE 18.**包容性/ Containment**

已证明在涡轮增压器 172000 转/分钟的最大转速下能够包容。/Containment has been demonstrated for max. turbocharger speed of 172000rpm.

注释 19/ NOTE 19.**螺旋桨控制/Propeller Control**

该发动机 EECU 中集成了螺旋桨控制。EECU 中的软件按符合 DO-178C 的 C 级研制。发动机及其 EECU 的批准不包括螺旋桨控制系统的批准。/

This engine design features an integrated propeller control in the EECU. The software in the EECU has been developed in accordance with DO-178C at level C. The approval of the engine and its EECU does not include approval of the propeller control system.

第二部分：管理信息/SECTION B: ADMINISTRATIVE INFORMATION

B I.型号持有人记录/Type Certificate Holder Record

芜湖钻石航空发动机有限公司

芜湖市湾沚区安徽新芜经济开发区钻石路 2 号

WUHU Diamond Aeroengine CO.,LTD

Diamond Road 2, Xinwu Economic Development Zone, Wanzhi district, Wuhu city

B II.修订记录/ Change Records

数据单版次信息/Revision of the Type Certificate Data Sheet

	数据单编号、版次和颁发日期/ Type Certificate Data Sheet Number, Revision and issuance date
当前/ Current	编号TC0084E，版次0。2023年07月05日/ No.TC0084E, Revision 0. 05 July 2023/

数据单修订记录/ Change Record of the Type Certificate Data Sheet

版次/Revision	相对上一版的修订记录/Change Record	备注/Remark
无/None		

----完----
----END----