

型号认可证数据单

THE VALIDATION DATA SHEET

编号/**No:** VTC0372E

版次/**Revision:** 3

型号/**Type:** PW1500G/1900G Engine

Model Series

型别/**Model:**

PW1519G

PW1521G

PW1524G

PW1525G

PW1521G-3

PW1524G-3

PW1525G-3

PW1919G

PW1921G

PW1922G

PW1923G

PW1521GA

PW1923G-A

批准人/**Approved By:**



职务/**Title:** Deputy Director General

日期/**Date:** 2025年09月16日

本数据单是型号认可证（编号：VTC0372E）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 part of Validation of Type Certificate (No: VTC0372E), 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.

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

普惠公司，东哈特福德主街400号，CT06118。

Pratt & Whitney, 400 Main Street East Hartford, CT 06118.

第1部分 概述

Section 1 GENERAL

1.型号认可证数据单版次信息以及修订记录/ Revision and Change Record of the Validation of Type Certificate Data Sheet

数据单版次信息/Revision of the 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	VTC0372E, 版次3, 2025年09月16日	FAA TCDS No. E00090EN, Revision 12, June 18, 2024
历史 History	VTC0372E, 版次2, 2024年07月19日	FAA TCDS No. E00090EN, Revision 11, December 5, 2022
	VTC0372E, 版次1, 2024年06月18日	FAA TCDS No. E00090EN, Revision 11, December 5, 2022
	VTC0372E, 版次0, 2022年10月25日	FAA TCDS No. E00090EN, Revision 4, Jan 29, 2018

注: 上表中出口国局方型号合格证数据单信息仅供参考

Note: Above TCDS information of Certification Authority is only for reference

认可数据单修订记录/ Change Record of the VTCDS

版次/ Revision	相对上一版的修订记录 Change Record	备注 Remark
版次3/Rev 3	1. 修订燃油排泄和排气排出物规定。 Amend exhaust emission regulatory requirements. 2. 增加CAAC认可审定基础。 Add the CAAC VALIDATION BASIS. 3. 增加了第3部分管理信息。 Add Section 3 ADMINISTRATIVE INFORMATION.	
版次2/Rev 2	1. 增加型别PW1923G-A Add model PW1923G-A	
版次1/Rev 1	1. 增加数据存储器件号 (额定值插头) Add Data Storage Unit PN (Ratings Plug) 2. 更新审定基础、生产基础 Renewal Certification Basis, Production Basis 3. 更改注释2中的最大连续温度 Change Maximum Continuous in NOTE 2 4. 更新注释11 Renewal NOTE11 5. 更新注释15 Renewal NOTE15 6. 更新注释16 Renewal NOTE16	

2. 类别/Category:

发动机/Engine

3. 认可当局/Validation Authority:

中国民用航空局/CAAC

审定当局/Certifying Authority:

美国联邦航空管理局/FAA

4. 型号合格证持有人/Type Certificate Holder:

普惠公司,
东哈特福德主街400号 06118。

- Pratt & Whitney.
400 Main Street East Hartford, CT 06118
5. 生产制造商/Manufacturer
- 普惠公司，
东哈特福德主街400号，CT06118。
Pratt & Whitney.
400 Main Street East Hartford, CT 06118
(序列号为P735922-P735942的PW1500G发动机依照加拿大交通部管理批准证书4-58，由Pratt & Whitney加拿大公司生产)
6. 双发延程飞行/ETOPS:
- 见注释11/See NOTE 11
7. CAAC专用要求/Special Requirements:
- (1) 中华人民共和国国家标准“3号喷气燃料”(GB 6537)。
National Standard of the People's Republic of China
“No.3 Jet Fuel”(GB 6537)
(2) 燃油排泄和排气排出物规定CCAR-34-R1
Fuel venting and exhaust emissions requirements
CCAR-34-R1

第2部分 数据单

Section 2 DATA SHEET

类型 TYPE	全权限数字式电子控制系统（FADEC）控制的高涵道比，轴流，双转子，涡轮风扇发动机。低压转子包括一级高涵道比风扇，三级低压压气机和三级低压涡轮。三级低压涡轮直接驱动三级低压压气机，并通过减速齿轮系统驱动高涵道比风扇。两级冷却高压涡轮驱动八级高压压气机。 High bypass ratio, axial-airflow, dual-spool, turbofan engine controlled by a Full Authority Digital Electronic Control (FADEC). The low pressure spool consists of a three-stage low pressure turbine that directly drives a three-stage low pressure compressor, and a single stage high bypass ratio fan through a fan drive gear speed reduction system. The high pressure compressor has eight axial stages driven by a two-stage cooled high pressure turbine.
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型别/MODELS:	PW1519G	PW1521G, PW1521G-3, PW1521GA	PW1524G, PW1524G-3, PW1525G, PW1525G-3
额定值（见注释1）/ RATINGS (See NOTE 1)			
海平面静推力（磅） SEA LEVEL STATIC THRUST (lb.)			
起飞（5分钟）（见注释2） Takeoff (5 minutes) (See NOTE 2)	19,775	21,970	24,400
最大连续 Maximum Continuous	18,685	20,760	23,050
平台额定环境温度 FLAT RATING AMBIENT TEMPERATURE			
起飞/Takeoff	30°C / 86°F	30°C / 86°F	30°C / 86°F
最大连续/Maximum Continuous	25°C / 77°F	25°C / 77°F	25°C / 77°F
数据存储器件号（额定值插头） Data Storage Unit PN (Ratings Plug)	5325208或5327258	5325206或5327259 (PW1521G) 5325207或5327261 (PW1521G-3) 5325781或5327264 (PW1521GA)	5325211 或 5327260 (PW1524G) 5325205 或 5327263 (PW1524G-3) 5325209 或 5327257 (PW1525G) 5325212或5327262 (PW1525G-3)

型别/MODELS:	PW1919G	PW1922G	PW1921G, PW1923G-A, PW1923G
额定值（见注释1）/ RATINGS (See NOTE 1)			
海平面静推力（磅） SEA LEVEL STATIC THRUST (lb.)			
正常起飞（5分钟）（见注释2） Normal Takeoff (5 minutes) (See NOTE 2)	20,860	23,815	22,550 (PW1921G) 23,815 (PW1923G-A) 23,815 (PW1923G)
最大起飞（5分钟）（见注释2）	22,550	23,815	24,110

Maximum Takeoff (5 minutes) (See NOTE 2) 最大连续 Maximum Continuous	20,305	20,305	21,805
平台额定环境温度 FLAT RATING AMBIENT TEMPERATURE 正常起飞/Normal Takeoff	30°C / 86°F	35°C / 95°F	30°C / 86°F (PW1921G) 30°C / 86°F (PW1923G-A) 35°C / 95°F (PW1923G) 33°C / 92°F (PW1921G) 34°C / 93°F (PW1923G-A) 34°C / 93°F (PW1923G) 25°C / 77°F
最大起飞/Maximum Takeoff	30°C / 86°F	35°C / 95°F	
最大连续/Maximum Continuous	25°C / 77°F	25°C / 77°F	
数据存储器件号（额定值插头） Data Storage Unit PN (Ratings Plug)	5327459或5327587	5327453或5327578	5322353 或5327583 (PW1921G) 5328019 (PW1923G-A) 5322354或5327584 (PW1923G)
部件/构型 COMPONENTS/CONFIGURATION	PW1500G部件及发动机构型信息，参考安装图5310001 For PW1500G information regarding components and engine configuration, refer to: Installation Drawing 5310001 PW1900G部件及发动机构型信息，参考安装图5350001 For PW1900G information regarding components and engine configuration, refer to: Installation Drawing 5350001		

型别: (续上表) MODELS: (cont.)	PW1519G	PW1521G, PW1521GA, PW1521G-3, PW1524G, PW1524G-3, PW1525G, PW1525G-3	PW1919G, PW1921G, PW1922G, PW1923G-A, PW1923G
主要尺寸（室温） PRINCIPAL DIMENSIONS (Room temperature)			
长度（安装边至安装边，英寸） Length (flange to flange, in.)	119.9	--	--
长度（风扇进气锥至后安装边，英寸） Length (fan spinner face to aft flange, in.)	125.4	--	--

名义直径（风扇机匣，英寸） Nominal diameter (fan case, in.)	79.0	--	--
最大径向投影（英寸）（余油管处） Maximum radial projection (in.) (at drain mast)	45.7	--	--
重心（英寸） CENTER OF GRAVITY (in.)			
发动机轴向站位，相对A安装边 Axial engine station, relative to A-flange:	58.5	--	--
纵向，相对于发动机中心线 Vertical, relative to engine centerline:	-0.5	--	--
横向，相对于发动机中心线 Lateral, relative to centerline:	-1.0	--	--
重量*（干重） WEIGHT * (DRY)	4,800	--	--
带有 P&W提供的标准设备的基本发动机（磅） Basic engine (lbs.) with P&W supplied Standard Equipment			
燃油/FUEL	服务通告PW1000G-A-73-00-0010-00A-930A-D定义了燃油要求并提供了PW1500G系列涡扇发动机批准使用的燃油及燃油添加剂清单。 Service Bulletin PW1000G-A-73-00-0010-00A-930A-D defines the fuels requirements and provides a listing of approved fuels and fuel additives for use in the PW1500G series turbofan engine. 服务通告PW1000G-A-73-00-0001-00B-930A-D定义了燃油要求并提供了PW1900G系列涡扇发动机批准使用的燃油及燃油添加剂清单。 Service Bulletin PW1000G-A-73-00-0001-00B-930A-D defines the fuels requirements and provides a listing of approved fuels and fuel additives for use in the PW1900G series turbofan engine.		
滑油/ LUBRICATING OILS	服务通告PW1000G-A-79-00-0001-00A-930A-D提供了PW1500G系列涡扇发动机批准使用的滑油清单。 Service Bulletin PW1000G-A-79-00-0001-00A-930A-D provides a listing of approved turbine oils for use in the PW1500G series turbofan engine. 服务通告PW1000G-A-79-00-0001-00B-930A-D提供了PW1900G系列涡扇发动机批准使用的滑油清单。 Service Bulletin PW1000G-A-79-00-0001-00B-930A-D provides a		

	listing of approved turbine oils for use in the PW1900G series turbofan engine.
	注: “-”表示与之前的型别相同; “---”表示不适用。 NOTE: “-” INDICATES “SAME AS PRECEDING MODEL”; “---” NOT APPLICABLE.

审定基础 CERTIFICATION BASIS	PW1500G发动机型别/PW1500G Engine Models: 1965年2月1日生效的14 CFR 33部第33-1至33-34修正案和以下等效安全: 14 CFR, Part 33, effective February 1, 1965, as amended by 33-1 through 33-34 with the following Equivalent level of safety findings: ● 33.78(a)(1), 吸雨和吸雹, 记录于编号TC3047EN-E-P-5-R1的等效安全备忘录中 33.78(a)(1), Rain and Hail Ingestion, documented in ELOS Memorandum No. TC3047EN-E-P-5-R1 ● 33.201(c)和(e), 早期ETOPS资格的设计和测试需求, 记录于编号TC3047EN-E-P-11的等效安全备忘录中 33.201(c) and (e), Design and Test Requirements for Early ETOPS eligibility, documented in ELOS Memorandum No. TC3047EN-E-P-11 PW1900G发动机型别/ PW1900G Engine Models: 1965年2月1日生效的14 CFR 33部第33-1至33-34修正案和以下等效安全: 14 CFR, Part 33, effective February 1, 1965, as amended by 33-1 through 33-34 with the following Equivalent level of safety findings: ● 33.78(a)(1), 吸雨和吸雹, 记录于编号TC3047EN-E-P-5-R1的等效安全备忘录中 33.78(a)(1), Rain and Hail Ingestion, documented in ELOS Memorandum No. TC3047EN-E-P-5-R1 ● 33.27(c)和(e), 涡轮, 压气机, 风扇和涡轮增压器转子超转, 记录于编号ME C19CZ145-P-1的等效安全备忘录中 33.27(c) and (e), Turbine, Compressor, Fan, and Turbo supercharger Rotor Overspeed, documented in ELOS Memorandum No. MEC19CZ145-P-1 下列型别符合2024年5月24日生效的14 CFR 34部第7A修正案。燃油排泄及排出物的审定基础详见注释11: The following models comply with 14 CFR Part 34, Amendment 7A, effective May 24, 2024. See NOTE 11 for detailed summary of the certification basis for fuel venting and exhaust emissions: PW1519G, PW1521G, PW1521GA, PW1521G-3, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, PW1923G-A 型号合格证编号E00090EN TYPE CERTIFICATE NUMBER E00090EN
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	型别 MODEL	申请日期 APPLICATION	发布/修订日期 ISSUED/AMENDED	删除日期 DELETED
	PW1519G	February 3, 2013 2013年2月3日	January 22, 2016 2016年1月22日	
	PW1521G	February 8, 2010 2010年2月8日	January 22, 2016 2016年1月22日	
	PW1524G	February 8, 2010 2010年2月8日	January 22, 2016 2016年1月22日	
	PW1525G	December 12, 2013 2013年12月12日	January 22, 2016 2016年1月22日	
	PW1521G-3	September 14, 2016 2016年9月14日	October 31, 2016 2016年10月31日	
	PW1524G-3	September 14, 2016 2016年9月14日	October 31, 2016 2016年10月31日	
	PW1525G-3	September 14, 2016 2016年9月14日	October 31, 2016 2016年10月31日	
	PW1919G	November 9, 2016 2016年11月9日	April 28, 2017 2017年4月28日	
	PW1921G	November 9, 2016 2016年11月9日	April 28, 2017 2017年4月28日	
	PW1922G	November 9, 2016 2016年11月9日	April 28, 2017 2017年4月28日	
	PW1923G	November 9, 2016 2016年11月9日	April 28, 2017 2017年4月28日	
	PW1521GA	May 3, 2017 2017年5月3日	January 29, 2018 2018年1月29日	
	PW1923G-A	June 6, 2018 2018年6月6日	November 27, 2018 2018年11月27日	
生产依据（所有 型别） PRODUCTION BASIS (ALL MODELS)	序列号为P735922-P735942的PW1500G发动机依照加拿大交通部管理批准证书4-58，由Pratt & Whitney加拿大公司生产。 PW1500G Engine Serial Numbers P735922-P735942 are produced by Pratt & Whitney Canada Corp. under Transport Canada Certificate of Management Approval 4-58. 序列号为P735943或更高的PW1500G发动机将依照生产许可证02，由Pratt & Whitney生产。 PW1500G Engine Serial Numbers P735943 and up will be produced by Pratt & Whitney under Production Certificate 02. 序列号为P783014或更高的PW1900G发动机将依照生产许可证02，由Pratt & Whitney生产。 PW1900G Engine Serial Numbers P783014 and up will be produced by Pratt & Whitney under Production Certificate 02.			

CAAC认可审定基础
CAAC VALIDATION BASIS

接受 FAA 的审定基础作为认可审定基础。
Accept FAA certification basis as validation basis.

附加技术条件/Additional Technical Requirement:

(1) 中华人民共和国国家标准“3号喷气燃料”（GB 6537）。
National Standard of the People's Republic of China“ No.3 Jet Fuel”（GB 6537）

(2) 燃油排泄和排气排出物规定CCAR-34-R1, 详见注释 11a
 Fuel venting and exhaust emissions requirements CCAR-34-R1,
 See NOTE 11a

注释/NOTES

注释1/NOTE 1. 发动机额定值（所有型别）/ ENGINE RATINGS (all models)

发动机额定值基于用以下条件校准的测试值:

Engine ratings are based on calibrated test stand performance under the following conditions:

1. 静止海平面，标准大气压（14.696 psia），至平台额定环境温度（°F）。
Sea level static, standard pressure (14.696 psia), up to the flat rating ambient temperature °F
2. 无引气或功率提取。
No customer bleed or customer horsepower extraction
3. 理想进气道，100%总压恢复。
Ideal inlet, 100% ram recovery
4. 生产型飞机整流罩。
Production aircraft flight cowlings
5. 生产型仪表。
Production instrumentation
6. 燃油低热值 18,400 BTU/lb.。
Fuel lower heating value of 18,400 BTU/lb.

注释2/NOTE 2. 温度（所有型别）/ TEMPERATURES (all models)

最高允许的指示涡轮温度（ITT）如下:

Maximum permissible Indicated Turbine Temperatures (ITT) are as follows:

起飞（5分钟）*/Takeoff (5 minutes)*: 1,054 degC / 1,929 degF

最大连续/Maximum Continuous: 1,017 degC / 1,863 degF

*发动机单发停车特殊情况下，正常的5分钟起飞额定值可延长至10分钟。

*The normal 5 minute takeoff rating may be extended to 10 minutes for engine out contingency.

指示涡轮温度（ITT）/Indicated Turbine Temperatures (ITT)

起动时/at start-up: 1,054 degC / 1,929 degF

滑油出口温度（所有型别）/ Oil outlet temperature (all models)

连续运行: 163摄氏度/325华氏度。20分钟以内最大滑油温度174摄氏度/345华氏度。在163摄氏度/325华氏度至174摄氏度/345华氏度区间内不可运行超过20分钟。详见PW1500G安装和使用手册PWA-8828及PW1900G安装和使用手册PWA-10649。

Continuous operation: 163 degC / 325 degF. Maximum oil temperature 174 degC / 345 degF for up to 20 minutes. Total operation between 163 degC / 325 degF and 174 degC / 345 degF cannot exceed 20 minutes. See PW1500G Installation and Operating Manual, PWA-8828 and PW1900G Installation and Operating Manual, PWA-10649 for details.

PW1500G:

最低慢车滑油温度，起飞推力运行前：48摄氏度/118华氏度。

Minimum oil temperature at idle, before takeoff power operation: 48 degC / 118 degF

最低地面运行滑油温度：21摄氏度/70华氏度。

Minimum oil temperature for ground operation: 21 degC / 70 degF.

PW1900G:

最低慢车滑油温度，起飞推力运行前：49摄氏度/120华氏度。

Minimum oil temperature at idle, before takeoff power operation: 49 degC / 120 degF

最低地面运行滑油温度：21摄氏度/70华氏度。

Minimum oil temperature for ground operation: 21 degC / 70 degF.

PW1500G:

燃油温度：见安装和使用手册PWA-8828。

Fuel Temperatures: See Installation and Operating Manual, PWA-8828

部件温度：见安装和使用手册PWA-8828。

Component Temperatures: See Installation and Operating Manual, PWA-8828

PW1900G:

燃油温度：见安装和使用手册PWA-10649。

Fuel Temperatures: See Installation and Operating Manual, PWA-10649

部件温度：见安装和使用手册PWA-10649。

Component Temperatures: See Installation and Operating Manual, PWA-10649

注释3/NOTE 3.

压力（所有型别）/ PRESSURES (all models)

燃油压力限制：发动机运行中燃油泵进口燃油压力应保持不小于真实蒸汽压力加5.0psi，并不大于汽/油比为零时绝对环境压力加100 psi。停车后燃油泵进口最大允许压力为120psig。

Fuel pressure limits: Fuel pressure at the engine fuel pump inlet during operation shall be maintained at not less than 5.0 psi above the true vapor pressure of the fuel but not greater than 100 psi above the absolute ambient pressure with a vapor/liquid ratio of zero. The maximum allowable pressure at the fuel pump inlet after shutdown is 120 psig.

滑油压力限制/Oil pressure limits:

最小值：慢车时50 psig。慢车外随N2转速而变化。见PW1500G安装和使手册PWA-8828和PW1900G安装和使手册PWA-10649。

Minimum: 50 psig at idle. Variable by N2 Speed off idle. See PW1500G Installation and Operating Manual, PWA-8828 and PW1900G Installation and Operating Manual, PWA-10649.

最大值：最大滑油温度小于49摄氏度/120华氏度时的低温最大滑油压力限制为235psig。其它情况为175psig。

Maximum: 235 psig cold high MOP limit for MOT < 49 degC / 120 degF.

Otherwise, 175 psig.

滑油供油压力作为主滑油压力进行测量。

Oil supply pressure is measured relative to main lube pressure.

负重力加速度操作时出现的临时滑油中断时间最大值为7秒。一旦负重力加速度消除，正常滑油压力将会迅速恢复。

Temporary interruption associated with negative “g” operation is limited to 7 seconds maximum. Normal oil pressure will be restored rapidly once the negative “g” effect has

been eliminated.

注释4/NOTE 4. 附件传动装置规定/ACCESSORY DRIVE PROVISIONS

PW1500G附件传动装置/Accessory Drives						
驱动面板 Drive Pad	旋转方向 Rotation	与N2转速比 Speed Ratio to N2	扭矩(磅英寸)/Torque (lb.-in.)			悬挂力矩 (磅英寸) Overhung Moment (lb.-in)
			连续 Continuous	过载 Overload	静态 Static	
液压泵 Hydraulic Pump	顺时针 /CW	0.1835:1	810	1650	3600	175
变频发电机 Variable Frequency Generator (VFG)	顺时针 /CW	0.8595:1	560*	1620*	5500	925

顺时针=面对驱动面板的顺时针方向/CW = Clockwise (facing the drive pad)

*在不存在由附件扭转振动导致的破坏性的力时，除非另行规定，最大允许连续扭矩值适用于任意转速。

* Maximum allowable continuous torque values are at any engine speed unless otherwise specified provided no destructive forces resulting from accessory torsional vibration are present.

在不存在由附件振动导致的破坏性力时，表中所列为附件驱动面的最大允许连续悬挂力矩。

Maximum allowable continuous overhung bending moments of accessories about drive face are as shown provided no destructive forces resulting from vibration are present.

PW1900G附件传动装置/Accessory Drives						
驱动面板 Drive Pad	旋转方向 Rotation	与N2转速比 Speed Ratio to N2	扭矩(磅英寸)/Torque (lb.-in.)			悬挂力矩 (磅英寸) Overhung Moment (lb.-in)
			连续 Continuous	过载 Overload	静态 Static	
液压泵 Hydraulic Pump	顺时针 /CW	0.1835:1	420	1400	3600	185.5
整体驱动发电机 Integrated Drive Generator (IDG)	顺时针 /CW	0.8595:1	280	1120	5500	925

顺时针=面对驱动面板的顺时针方向/CW = Clockwise (facing the drive pad)

*在不存在由附件扭转振动导致的破坏性的力时，除非另行规定，最大允许连续扭矩值适用于任意转速。

* Maximum allowable continuous torque values are at any engine speed unless otherwise specified provided no destructive forces resulting from accessory torsional vibration are present.

在不存在由附件振动导致的破坏性力时，表中所列为附件驱动面的最大允许连续悬挂力矩。

Maximum allowable continuous overhung bending moments of accessories about drive face are as shown provided no destructive forces resulting from vibration are present.

注释5/NOTE 5. 型别描述/MODEL DESCRIPTION:

PW1500G系列发动机由以下发动机型别组成:

The PW1500G engine series consist of the following engine models:

PW1519G 庞巴迪CS100减推力型/Bombardier CS100 reduced thrust model
 PW1521G 庞巴迪CS100减推力型/Bombardier CS100 reduced thrust model
 PW1521GA 庞巴迪CS100减爬升推力型/Bombardier CS100 reduced climb thrust model
 PW1524G 庞巴迪CS100基本型/Bombardier CS100 basic model
 PW1525G 庞巴迪CS100替代爬升推力型/Bombardier CS100 alternate climb thrust model
 PW1521G-3 庞巴迪CS-300减推力型/Bombardier CS-300 reduced thrust model
 PW1524G-3 庞巴迪CS-300基本型/Bombardier CS-300 basic model
 PW1525G-3 庞巴迪CS-300替代爬升推力型/Bombardier CS-300 alternate climb thrust model

PW1900G系列发动机由以下发动机型别组成:

The PW1900G engine series consist of the following engine models:

PW1919G 巴西航空工业公司 E190-E2型/Embraer E190-E2 model
 PW1921G 巴西航空工业公司 E195-E2型/Embraer E195-E2 model
 PW1922G 巴西航空工业公司 E190-E2型/Embraer E190-E2 model
 PW1923G 巴西航空工业公司 E195-E2型/Embraer E195-E2 model
 PW1923G-A 巴西航空工业公司 E195-E2型/Embraer E195-E2 model

注释6/NOTE 6. 作为发动机型号设计一部分被提供的具有飞机级要求的典型飞机附件, 部件, 或系统组件:

TYPICAL AIRCRAFT ACCESSORIES, COMPONENTS, OR SYSTEM ASSEMBLIES, WITH AIRCRAFT LEVEL REQUIREMENTS, PROVIDED AS PART OF ENGINE TYPE DESIGN:

不适用/Not Applicable

注释7/NOTE 7. 安装在发动机上但不作为发动机型号设计一部分被提供的飞机附件, 部件, 或系统组件:

AIRCRAFT ACCESSORIES, COMPONENTS, OR SYSTEM ASSEMBLIES INSTALLED ON THE ENGINE BUT ARE NOT PROVIDED AS PART OF ENGINE TYPE DESIGN:

不适用/Not Applicable

注释8/NOTE 8. 特殊防冰、除冰要求:

SPECIAL ANTI-ICING OR DE-ICING REQUIREMENTS:

不适用/Not Applicable

注释9/NOTE 9. 发动机安装系统要求/ENGINE MOUNT SYSTEM PROVISIONS:

PW1500G发动机安装系统要求详见安装图5310001及安装与机动载荷图5310003。
 PW1500G Engine mount system provisions are specified in Installation Drawing 5310001 and Mount and Maneuver Load Drawing, 5310003.

PW1900G发动机安装系统要求详见安装图5350001及安装与机动载荷图5350003。
 PW1900G Engine mount system provisions are specified in Installation Drawing 5350001 and Mount and Maneuver Load Drawing, 5350003.

注释10/NOTE 10. 动力提升、喷射或加力系统:

POWER BOOST, INJECTION OR AUGMENTATION SYSTEMS:
不适用/ Not applicable

注释11/NOTE 11. 特殊安装要求/SPECIAL INSTALLATION REQUIREMENTS:

ETOPS/双发延程飞行:

除了33.201(c)和(e)的要求是通过一个等效安全来满足之外, PW1519G, PW1521G, PW1521GA, PW1524G, PW1525G, PW1521G-3, PW1524G-3,和PW1525G-3发动机构型均符合§§ 33.4(A33.3(c)),33.71(c)(4)以及33.201的要求, 因此符合批准了延程运行(ETOPS)和早期ETOPS的飞机的安装条件。已验证的延程时间为最大连续推力下180分钟加保持推力下的15分钟。注意ETOPS资格并不构成执行ETOPS飞行所必须的飞机或运行级的批准。

The PW1519G, PW1521G, PW1521GA, PW1524G, PW1525G, PW1521G-3, PW1524G-3, and PW1525G-3 engine models have complied with the requirements of §§ 33.4 (A33.3(c)), 33.71(c)(4) and 33.201, except for the requirements of 33.201(c) and (e) which were met by an equivalent level of safety, and are therefore eligible for installation on Extended Operations (ETOPS) and Early ETOPS approved airplanes. The demonstrated diversion time is 180 minutes at MCT plus 15 minutes at hold power. Note that ETOPS eligibility does not constitute airplane or operational level approvals necessary to conduct ETOPS flights.

PW1900G系列发动机不具备早期双发延程运行(ETOPS)资格。

The PW1900G Engine models are not eligible for Early Extended Twin Engine Operations (ETOPS) Operation.

限时派遣/Time Limited Dispatch:

PW1500G和PW1900G系列发动机已具备限时派遣能力。安装于庞巴迪C系列飞机的PW1500G发动机构型, 它们的适航限制手册PN5305816和PWA-11078“PW1500G/时间限制派遣故障信息/派遣类别交叉引用报告”规定了与发动机控制系统派遣和维修要求有关的标准。安装于巴西航空工业E190/E195飞机的PW1900G发动机构型, 它们的适航性限制手册5321709和PWA-10710“PW1900G降级派遣维修信息/派遣类别交叉引用”规定了与发动机控制系统派遣和维修要求有关的标准。FADEC系统故障分成以下四个类别: A)不派遣, B)短航程派遣, C)长航程派遣, 或D)运行修正。适航限制手册将提供短航程派遣和长航程派遣间隔(见注释15)。

The PW1500G and PW1900G Engine Series are certified with Time Limited Dispatch. Criteria pertaining to the engine control systems' dispatch and maintenance requirements for the PW1500G engine models installed on the Bombardier C Series Aircraft are specified in their Airworthiness Limitations Manuals PN 5305816 and PWA-11078 "PW1500G / Time Limited Dispatch Fault Message / Dispatch Category Cross-Reference Report". Criteria pertaining to the engine control systems' dispatch and maintenance requirements for the PW1900G engine models installed on the Embraer E190/E195 Aircraft are specified in their Airworthiness Limitations Manual 5321709 and PWA-10710 "PW1900G Degraded Dispatch Maintenance Message / Dispatch Category Cross-Reference". FADEC System faults fall into four categories as follows: A) No Dispatch, B) Short Term Dispatch, C) Long Term Dispatch, or D) Fix at Operators Discretion. Details on the short and long term dispatch intervals are provided in the Airworthiness Limitations Manual (See NOTE 15).

反推/Thrust Reverser:

反推装置不属于发动机型号设计, 而是作为飞机构型的一部分审查取证。反推装置安装信息见安装和使用手册(见注释15)。

The thrust reverser is not part of the engine type design and is certified as part of the aircraft. Information for installation of a thrust reverser is contained in the Installation and Operating Manual (See NOTE 15).

排气排出物及燃油排泄/Exhaust Emissions And Fuel Venting:

PW1519G, PW1521G, PW1521GA, PW1521G-3, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G和 PW1923G-A发动机符合于2024年5月24日生效的14 CFR 34部第7A修正案以及于2022年12月23日生效的40 CFR 1031部所公布的如下排放标准。

The following emissions standards promulgated in 14 CFR Part 34, Amendment 7A, effective May 24, 2024, and 40 CFR part 1031, effective December 23, 2022, have been complied with for the PW1519G, PW1521G, PW1521GA, PW1521G-3, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A engine models.

燃油排气标准: 14 CFR第34.10(a)条和第34.11条, 以及40 CFR第1031.30(b)(2)条。

Fuel Venting Emission Standards: 14 CFR §§ 34.10(a) and 34.11; in addition, 40 CFR §1031.30(b)(2).

一氧化碳(CO)排放标准: 14 CFR第34.21(d)(1)(ii)条, 以及40 CFR第1031.60(d)条。

Carbon Monoxide (CO) Emission Standards: 14 CFR § 34.21(d)(1)(ii); in addition, 40 CFR §1031.60(d).

碳氢化物(HC)排放标准: 14 CFR第34.21(d)(1)(i)条, 以及40 CFR第1031.60(c)条。

Hydrocarbons (HC) Emission Standards: 14 CFR § 34.21(d)(1)(i); in addition, 40 CFR § 1031.60(c).

氮氧化物(NO_x)排放标准: 14 CFR第34.23(b)(1)条, 以及40 CFR第1031.60(e)(5)条。

Oxides of Nitrogen (NO_x) Emission Standards: 14 CFR 34.23(b)(1); in addition, 40 CFR 1031.60(e)(5).

非挥发性颗粒物(nvPM)质量浓度(nvPMMC): 14 CFR 第34.25(a)(1)条, 以及40 CFR第1031.60(a)(6)条。

Non-volatile particulate nvPM mass concentration (nvPMMC): 14 CFR § 34.25(a)(1); in addition 40 CFR §1031.60(a)(6).

非挥发性颗粒物(nvPM)质量(nvPMmass)和数量(nvPMnum): 14 CFR第34.25(a)(2)条, 以及40 CFR第1031.60(b)(2)条。

Non-volatile particulate nvPM mass (nvPMmass) & nvPM number (nvPMnum): 14 CFR § 34.25(a)(2); in addition 40 CFR § 1031.60(b)(2).

除了型号合格证数据单No. E00090EN确定的审定要求的符合性之外, 发动机制造商声明已证明符合2020年7月20日生效的附录16, 第II卷, 第4版, 第10修正案中确定的ICAO排放标准:

In addition to the finding of compliance based on the certification requirements defined in TCDS No. E00090EN, the engine manufacturer has declared that the ICAO emissions standards identified in Annex 16, Volume II, Fourth Edition, Amendment 10, effective July 20, 2020, have also been demonstrated for the following:

- 第二部，第二章的燃油排放
Part II, Chapter 2 for Fuel Venting
- 第三部，第二章，2.2.2节的发烟指数
Part III, Chapter 2, Section 2.2.2 for Smoke Number
- 第三部，第二章，2.3.2节的一氧化碳和碳氢化合物
Part III, Chapter 2, Section 2.3.2 for Carbon Monoxide and Hydrocarbons
- 第三部，第二章，2.3.2节的氮氧化物（也被称为CEAP/8），以及
Part III, Chapter 2, Section 2.3.2 for Oxides of Nitrogen (also known as CAEP/8), and
- 第三部，第四章，4.2.2节的非挥发性颗粒物（也被称为CEAP/10和CEAP/11）
Part III, Chapter 4, Section 4.2.2 for non-volatile Particulate Matter (also known as CAEP/10 & CAEP/11)

电磁干扰防护/Electromagnetic Protection:

雷击防护要求及包括线缆在内的发动机电子控制系统发出的电磁干扰详见安装和使用手册（见注释15）。

Lightning protection requirements and electromagnetic interference emitted by the electronic engine control system, including cables, are specified in the Installation and Operating Manual (See NOTE 15).

注释11a/NOTE 11a PW1519G, PW1521G, PW1521GA, PW1521G-3, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G和PW1923G-A发动机满足中国民航规章《涡轮发动机飞机燃油排泄和排气排出物规定》（CCAR-34R1）（2023年1月1日生效）的下列标准：

- 非挥发性颗粒物排放标准：CCAR 34.21(e)款（CAEP/10与CAEP/11）

The following emissions standards promulgated in CAAC regulation CCAR-34R1, effective January 1st, 2023, have been complied with for: PW1519G, PW1521G, PW1521GA, PW1521G-3, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G and PW1923G-A:

- Non-volatile Particulate Matter emission standards: CCAR 34.21(e) (CAEP/10 and CAEP/11)

注释12/NOTE 12. 涉及利益问题的制造商服务通告或其他说明：
MANUFACTURER'S SERVICE BULLETINS OR OTHER INSTRUCTIONS
COVERING MATTERS OF INTEREST:
不适用/ Not applicable

注释13/NOTE 13. 特殊操作程序/SPECIAL OPERATING PROCEDURES:
在结冰条件下飞行时最低N1转速为1,991rpm。EEC将防止在飞行中转子转速低于该值。

The minimum N1 certified for in-flight operation in icing conditions is 1,991 rpm. The Electronic Engine Control will prevent rotor speeds below this value while in flight.

在结冰条件下地面操作时的要求和限制见安装和使用手册（见注释15）。
Requirements and limitations for ground operation in icing conditions are specified in the Installation and Operating Manual (See NOTE 15).

注释14/NOTE 14. 特殊修理或大修限制/SPECIAL REPAIR OR OVERHAUL LIMITATIONS:
不适用/ Not applicable

注释15/NOTE 15.

适用的安装、维护及翻修手册

APPLICABLE INSTALLATION, MAINTENANCE & OVERHAUL MANUALS

PW1500G:

以下手册在14 CFR § 33.5的要求下获得了批准:

The following manuals have been approved under the requirements of 14 CFR § 33.5:

1) 安装和使用手册PWA-8828。

Installation and Operating Manual, PWA-8828.

以下持续适航文件(ICA)在14 CFR § 33.4的要求下得到了批准或接受

The following Instructions for Continued Airworthiness (ICA) have been approved or accepted under the requirements of 14 CFR § 33.4

1) 适航限制手册, PN 5305816

1) Airworthiness Limitation Manual, PN 5305816

2) 发动机维护手册(EMM), PN 5305818

2) Engine Maintenance Manual (EMM), PN 5305818

3) 发动机手册(EM), PN 5305815

3) Engine Manual (EM), PN 5305815

4) 清洁, 检查, 修理手册(CIR), PN 5305817

4) Cleaning, Inspection, Repair Manual (CIR), PN 5305817

5) 故障隔离程序手册(FIM), PN 5319822

5) Fault Isolation Procedures Manual (FIM), PN 5319822

6) 标准操作手册(SPM), PN 585005

6) Standard Practices Manual (SPM), PN 585005

7) 特殊操作-风扇传动齿轮系统(FDGS)手册, PN 5317957

7) Special Procedures - Fan Drive Gear System (FDGS) Manual, PN 5317957

8) 特殊操作-高压压气机(HPC)单元, PN 5317961

8) Special Procedures - High Pressure Compressor (HPC) Module, PN 5317961

9) 特殊操作-高压涡轮(HPT)单元, PN 5317960

9) Special Procedures - High Pressure Turbine (HPT) Module, PN 5317960

10) 特殊操作-高压涡轮(HPT)核心, PN 5324688

10) Special Procedures - High Pressure Turbine (HPT) Core, PN 5324688

11) 特殊操作-高压涡轮(HPT)螺母, PN 5324694

11) Special Procedures - High Pressure Turbine (HPT) Nut, PN 5324694

12) 部件维护手册(CMM)

12) Component Maintenance Manuals (CMM)

PW1900G:

以下手册在14 CFR § 33.5的要求下获得了批准:

The following manuals have been approved under the requirements of 14 CFR § 33.5:

- 1) 安装和运行手册, PWA-10649
- 1) Installation and Operating Manual, PWA-10649

以下持续适航文件 (ICA) 在14 CFR § 33.4的要求下得到了批准或接受
The following Instructions for Continued Airworthiness (ICA) have been approved or accepted under the requirements of 14 CFR § 33.4

- 1) 适航限制手册, PN 5321709
- 1) Airworthiness Limitation Manual, PN 5321709
- 2) 发动机维护手册 (EMM), PN 5321705
- 2) Engine Maintenance Manual (EMM), PN 5321705
- 3) 发动机手册 (EM), PN 5321708
- 3) Engine Manual (EM), PN 5321708
- 4) 清洁, 检查, 修理手册 (CIR), PN 5321706
- 4) Cleaning, Inspection, Repair Manual (CIR), PN 5321706
- 5) 故障隔离程序手册 (FIM), PN 5324697
- 5) Fault Isolation Procedures Manual (FIM), PN 5324697
- 6) 标准操作手册 (SPM), PN 585005
- 6) Standard Practices Manual (SPM), PN 585005
- 7) 特殊操作-风扇传动齿轮系统 (FDGS) 手册, PN 5321702
- 7) Special Procedures - Fan Drive Gear System (FDGS) Manual, PN 5321702
- 8) 特殊操作-高压压气机 (HPC) 单元, PN 5321703
- 8) Special Procedures - High Pressure Compressor (HPC) Module, PN 5321703
- 9) 特殊操作-高压涡轮 (HPT) 单元, PN 5321704
- 9) Special Procedures - High Pressure Turbine (HPT) Module, PN 5321704
- 10) 特殊操作-高压涡轮 (HPT) 核心, PN 5324689
- 10) Special Procedures - High Pressure Turbine (HPT) Core, PN 5324689
- 11) 特殊操作-高压涡轮 (HPT) 螺母, PN 5324695
- 11) Special Procedures - High Pressure Turbine (HPT) Nut, PN 5324695
- 12) 部件维护手册 (CMM)
- 12) Component Maintenance Manuals (CMM)

注释16/NOTE 16. 进口要求/IMPORT REQUIREMENTS:

每一台出口到美国的发动机应附有出口认可民用适航当局签署的出口适航证或证明声明才有资格安装在在美国 (U.S.) 注册的飞机, 这些证件应包含如下语言:
To be considered eligible for installation on United States (U.S.) registered aircraft, each engine to be exported to the U.S. shall be accompanied by a certificate of airworthiness for export or by a certifying statement, endorsed by the exporting cognizant civil airworthiness authority and containing the following language:

1. 这台发动机符合它的编号为E00090N的型号合格证书并处于安全运行状态。

1. This engine conforms to its Type Certificate Number E00090EN and is in a condition for safe operation.

2. 这台发动机经过了制造商的最终运行检查并处于适航的正确状态。

2. This engine has been subjected by the manufacturer to a final operational check and is in a proper state of airworthiness.

参见适用的双边协议，基于协议的范围来核实新的和使用过的飞机是否有进口到美国的资格，以确认出口当局在出口适航证（或同等文件）上任何要求的声明以及协调这些文件上的符合性声明例外情况的程序。关于进口飞机适航证的签发要求，参见FAA8130.2号指令“飞机适航审定”。

Refer to the applicable bilateral agreement to verify eligibility for import into the United States of both new and used aircraft based on the scope of the agreement, to identify any required statements by the exporting authority on the export certificate of airworthiness (or equivalent document), and for procedures for coordinating exceptions to conformity statements on these documents. Refer to FAA Order 8130.2, Airworthiness Certification of Aircraft, for requirements for issuance of an airworthiness certificate for imported aircraft.

注释17/NOTE 17. 限寿件信息/LIFE LIMITED PART INFORMATION

PW1500G发动机关键部件的寿命限制和强制检查要求详见PW1500G适航限制手册PN 5305816。

PW1500G life limits for critical components and mandatory inspection requirements are specified in the PW1500G Airworthiness Limitation Manual PN 5305816.

PW1900G发动机关键部件的寿命限制和强制检查要求详见PW1500G适航限制手册PN 5321709。

PW1900G life limits for critical components and mandatory inspection requirements are specified in the PW1500G Airworthiness Limitation Manual PN 5321709.

注释18/NOTE 18. 删除/Delete

注释19/NOTE 19. 转子速度/ROTOR SPEEDS

最大允许低压转子转速（N1）： 10,600 rpm

Maximum permissible Low Pressure Rotor (N1): 10,600 rpm

最小低压转子转速（N1）

Minimum Low Pressure Rotor (N1)

飞行慢车/Flight Idle: 1,991 rpm

地面慢车/ Ground Idle: 1,574 rpm

（见注释13/ See Note 13）

最大允许高压转子转速（N2）： 24,470 rpm

Maximum permissible High Pressure Rotor (N2): 24,470 rpm

最小高压转子转速（N2）

Minimum High Pressure Rotor (N2)

地面慢车/Ground Idle: 13,264 rpm

飞行慢车/ Flight Idle: 13,264 rpm

所有运行中的功率设置，功率检查，发动机推力输出控制均基于低压转子转速（N1）。风扇转速，（NFAN）与低压转子转速（N1）的齿轮传动比为：1: 3.0625。

Power setting, power checks, and control of engine thrust output in all operations are based on Low Rotor Speed (N1). Fan Speed, (NFAN) is directly proportional to Low Rotor Speed (N1) by a gear ratio of 1: 3.0625.

注释20/NOTE 20. 输出轴/螺旋桨轴扭矩限制OUTPUT/PROPELLER SHAFT TORQUE LIMITS:
不适用/ Not applicable

注释21/NOTE 21. 最大允许压气机引气提取/MAXIMUM PERMISSIBLE COMPRESSOR AIR BLEEDS:
最大允许引气提取限制详见PW1500G安装和使用手册PWA-8828，和PW1900G安装和使用手册PWA-10649。
Maximum Permissible Bleed Air Extraction limits are specified in the PW1500G Installation and Operating Manual, PWA-8828, and PW1900G Installation and Operating Manual, PWA-10649.

注释22/NOTE 22. 转子盘完整性和转子叶片包容（特殊要求）
ROTOR DISK INTEGRITY AND ROTOR BLADE CONTAINMENT (where special requirements apply):
不适用/ Not applicable

第3部分 管理信息

Section 3 ADMINISTRATIVE INFORMATION

1. 型号认可证持有人记录/ Validation of Type Certificate Holder Record

序号/No.	时间/Time	持证人名称/Name of Validation of Type Certificate Holder
1	2022年10月25日之后/ After October 25, 2022	普惠公司/ Pratt & Whitney

----完----

----END----