

中国民用航空局
CIVIL AVIATION ADMINISTRATION OF CHINA

型号认可证数据单

THE VALIDATION DATA SHEET

编号/No.: VTC0190E

版次/Revision: 4

型号/Type:

Arriel 2B Arriel 2B1 Arriel 2B1A
Arriel 2C Arriel 2C1 Arriel 2C2
Arriel 2S1 Arriel 2S2 Arriel 2D
Arriel 2E

批准人/Approved By: Yang Zhenmei



职务/Title: Deputy Director General of CAAC-AAD

日期/Date: 2016 年 10 月 20 日

本数据单是型号认可证（编号：VTC0190E）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: VTC0210E), 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:

Safran Helicopter Engines
64510 Bordes France

有效页清单/List of effective pages:

页数/Pages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
版次/Revision	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
页数/Pages	18	19	20	21	22	23											
版次/Revision	4	4	4	4	4	4											

型号认可证数据单

THE VALIDATION DATA SHEET

编号/No.: VTC0190E

版次/Revision: 4

型号/Type:

Arriel 2B Arriel 2B1 Arriel 2B1A
Arriel 2C Arriel 2C1 Arriel 2C2
Arriel 2S1 Arriel 2S2 Arriel 2D
Arriel 2E

批准人/Approved By: Yang Zhenmei

职务/Title: Deputy Director General of CAAC-AAD

日期/Date: 2016 年 10 月 20 日

本数据单是型号认可证（编号：VTC0190E）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: VTC0190E), 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:

Safran Helicopter Engines
64510 Bordes France

有效页清单/List of effective pages:

页数/Pages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
版次/Revision	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
页数/Pages	18	19	20	21	22	23											
版次/Revision	4	4	4	4	4	4											

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	VTC0190E, 版次4, 2016年10月20日; No. VTC0190E, Revision 4, XX October, 2016	EASA.E.001, 第7版, 2012年12月17日颁发 EASA TCDS No. E001, Revision 07, 17 December, 2012
历史 History	VTC123E, 版次1, 2007年10月09日 No. VTC0190E; Revision 1; 09 October, 2007	EASA.E.001, 第4版, 2007年2月12日颁发 EASA TCDS No. E001, Revision 04, 12 February, 2007
	VTC0190E, 版次2, 2008年7月11日 No. VTC0190E; Revision 2; 11 July, 2008	EASA.E.001, 第4版, 2007年2月12日颁发 EASA TCDS No. E001, Revision 04, 12 February, 2007
	VTC0190E, 版次3, 2012年4月26日 No. VTC0190E; Revision 3; 26 April, 2012	EASA.E.001, 第6版, 2011年5月16日颁发 EASA TCDS No. E001, Revision 06, 16 May, 2011

2. 类别/Category:

发动机/Engine

3. 认可当局/Validation Authority:
审定当局/Certifying Authority:中国民用航空局/CAAC
美国联邦航空局/FAA

4. 型号合格证持有人/Type Certificate Holder:

Safran Helicopter Engines
64510 Bordes France

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 审定基础

Section 2 Certification Basis

1. 确定适用适航要求的参照日期/Reference Date for determining the applicable airworthiness requirements

1993 年 5 月 14 日/14 May 1993

2. 审定基础/Certification Basis

适航标准与环保要求/Airworthiness Standards and Environmental Protection Requirements

型号/Model	适航标准/Airworthiness Standards	环保要求/Environmental Protection Requirements
Arriel 2B	1994 年 10 月 21 日生效的 JAR-E Change 9, 1996 年 8 月 8 日生效的橙色页 E/96/1 JAR-E Change 9 dated 21 October 1994, Orange Paper E/96/1 dated 08 August 1996	按照 ICAO 附件 16 第二卷, 第二部, 第二章 (1993 年版) 燃油排放规定 Fuel venting provisions of ICAO Annex16, vol II, Part2, Chapter 2 (Edition1993)
Arriel 2B1		
Arriel 2B1A		
Arriel 2D	1994 年 10 月 21 日生效的 JAR-E Change 9, 1996 年 8 月 8 日生效的橙色页 E/96/1, 1997 年 12 月 30 日生效的橙色页 E/97/1, 1999 年 8 月 15 日生效的 JAR-E Change 10 中的 JAR-E 740 与 JAR-E 745, 2007 年 12 月 10 日生效的 CS-E 第一版中的 CS-E 50 (d) 和 (f) 与 CS-E 1030, 2009 年 12 月 18 日生效的 CS-E 第二版中的 CS-E 570。 JAR-E Change 9 dated 21 October 1994, Orange Paper E/96/1 dated 08 August 1996 Orange Paper E/97/1 dated 30 December 1997, JAR-E 740 and E 745 of JAR-E Change 10 dated 15 August 1999, CS-E 50(d) and (f), and CS-E 1030 of CS-E Amendment1 dated 10 December 2007, CS-E 570 of CS-E Amendment 2 dated 18 December 2009.	按照 2008 年 11 月 20 日生效的 ICAO 附件 16 第二卷, 第二部, 第二章燃油排放规定的第 6 修正案, 适用于涡轴发动机 Environmental protection requirements of ICAO Annex 16 Volume II, Part II, Chapter 2 Amendment 6 effective 20 November 2008, as applicable to turboshaft engines.
Arriel 2C	1994 年 10 月 21 日生效的 JAR-E Change 9, 1996 年 8 月 8 日生效的橙色页 E/96/1 JAR-E Change 9 dated 21 October 1994 Orange Paper E/96/1 dated 08 August 1996	按照 ICAO 附件 16 第二卷, 第二部, 第二章 (1993 年版) 燃油排放规定 Fuel venting provisions of ICAO Annex16, vol II, Part 2, Chapter 2 (Edition1993)
Arriel 2C1		
Arriel 2S1		
Arriel 2C2	1994 年 10 月 21 日生效的 JAR-E Change 9, 1996 年 8 月 8 日生效的橙色页 E/96/1, 1997 年 12 月 30 日生效的橙色页 E/97/1 JAR-E Change 9 dated 21 October 1994, Orange Paper E/96/1 dated 08 August 1996, Orange Paper E/97/1 dated 30 December 1997	环保要求按欧盟规章 (EC)1702/2003 中的 21A.18(b) Environmental protection requirements of 21A.18(b) of Regulation (EC)1702/2003
Arriel 2S2		

Arriel 2E	1994 年 10 月 21 日生效的 JAR-E Change 9, 1996 年 8 月 8 日生效的橙色页 E/96/1, 1997 年 12 月 30 日生效的橙色页 E/97/1, 1999 年 8 月 15 日生效的 JAR-E Change 10 中的 JAR-E 745, 2001 年 11 月 1 日生效的 JAR-E 第 11 版中的 JAR-E 820, 2003 年 5 月 1 日生效的 JAR-E 第 12 版中的 JAR-E 20, JAR-E 25, JAR-E 30, JAR-E 40, JAR-E 50, JAR-E 60, JAR-E 140 (d)(3), JAR-E 170, JAR-E 690, JAR-E 730, JAR-E 740, JAR-E 830 and JAR-E 920, 2007 年 12 月 10 日生效的 CS-E 第一版中的 CS-E 50(d)、(f)与 CS-E 1030, 2009 年 12 月 18 日生效的 CS-E 第二版中的 CS-E 570。 JAR-E Change 9 dated 21 October 1994, Orange Paper E/96/1 dated 08 August 1996, Orange Paper E/97/1 dated 30 December 1997, JAR-E 745 of JAR-E Change 10 dated 15 August 1999, JAR-E 820 of JAR-E Amendment 11 dated 1 November 2001, JAR-E 20, JAR-E 25, JAR-E 30, JAR-E 40, JAR-E 50, JAR-E 60, JAR-E 140(d)(3), JAR-E 170, JAR-E 690, JAR-E 730, JAR-E 740, JAR-E 830 and JAR-E 920 of JAR-E Amendment 12 dated 1 May 2003, CS-E 50(d) and (f), and CS-E 1030 of CS-E Amendment 1 dated 10 December 2007, CS-E 570 of CS-E Amendment 2 dated 18 December 2009	按照 2008 年 11 月 20 日生效的 ICAO 附件 16 第二卷, 第二部, 第二章燃油排放规定的第 6 修正案, 适用于涡轴发动机 Environmental protection requirements of ICAO Annex 16 Volume II, Part II, Chapter 2 Amendment 6 effective 20 November 2008, as applicable to turboshaft engines.
-----------	---	---

专用条件, 偏差与等效安全项目 / Special Conditions, Deviations and Equivalent Safety Findings

型号/Model	专用条件/Special Conditions	偏差/Deviations	等效安全项目/ Equivalent Safety Findings
Arriel 2B, 2B1, 2B1A	无/None	JAR-E 570(a)(4)(ii) 与 (5)(ii) 机组人员指示 JAR-E 570(a)(4)(ii) and (5)(ii)-Indication to the flight crew	JAR-E 740 持久试验 /JAR-E740 Endurance test
Arriel 2D	SC1: 涡轴 30 分钟额定起飞功率的批准 SC1: Approval of Turboshaft 30-minute Take-off Power Rating	无/none	无/none
Arriel 2C	SC1 至 SC12: 30 秒, 2 分钟与连续 OEI 功率批准的专用条件 SC1 to SC12: Special Conditions for approval of the 30-Second, 2-minute and Continuous OEI ratings	JAR-E 570(a)(4)(ii) 与 (5)(ii) 机组人员指示 JAR-E 570(a)(4)(ii) and (5)(ii)-Indication to the flight crew	无/none
Arriel 2C1			JAR-E 80, E 740 “双通道控制系统持久试验” JAR-E 80, E 740 “Dual channel control system endurance”

Arriel 2S1	SC1 至 SC12: 30 秒, 2 分钟与连续 OEI 功率批准的专用条件 SC1 to SC12: Special Conditions for approval of the 30-Second, 2-minute and Continuous OEI ratings SC13 至 SC15: HIP/SARM 功率批准的专用条件 SC13 to SC15: Special conditions for approval of the HIP/SARM rating	JAR-E 570(a)(4)(ii) 与 (5)(ii) 机组人员指示 JAR-E 570(a)(4)(ii) and (5)(ii)-Indication to the flight crew	无/none
Arriel 2C2	SC1-C2: 30 秒与 2 分钟 OEI 功率审定的专用条件 SC1-C2: Special Conditions for certification of “30second and 2 minutes OEI ratings”		无/none
Arriel 2S2	SC2-C2: HIP/SARM 功率审定的专用条件 SC2-C2: Special Condition for certification of HIP/SARM rating		
Arriel 2E	SC1: 涡轴 30 分钟额定起飞功率的批准 SC1: Approval of Turboshaft 30-minute Take-off Power Rating	无/none	

3. 型号/型别/衍生型/Type/Model/Variants

型号/Type: Arriel 2

型号/Model	安装/Installation
Arriel 2B	单发直升机/ Single-engine helicopters
Arriel 2B1	
Arriel 2B1A	
Arriel 2D	
Arriel 2C	双发直升机/ Twin-engine helicopters
Arriel 2C1	
Arriel 2C2	
Arriel 2S1	
Arriel 2S2	
Arriel 2E	

4. 审定申请日期与 EASA 审定日期/Certification Application Date and EASA Certification Date

型号/Model	申请日期/Application Date	EASA 审定日期 EASA Certification Date	备注/Note
Arriel 2B	1996 年 12 月 9 日/09 December 1996	1997 年 12 月 1 日/01 December 1997	(1)
Arriel 2B1	1998 年 6 月 3 日/03 June 1998	2000 年 11 月 15 日/15 November 2000	(1)
Arriel 2B1A	2002 年 6 月 7 日/07 June 2002	2003 年 12 月 11 日/11 December 2003	(1)
Arriel 2D	2008 年 5 月 26 日/26 May 2008	2011 年 5 月 16 日/16 May 2011	
Arriel 2C	1996 年 12 月 9 日/09 December 1996	1997 年 8 月 29 日/29 August 1997	(1)
Arriel 2C1	1997 年 9 月 10 日/10 September 1997	1998 年 12 月 8 日/08 December 1998	(1)
Arriel 2C2	1999 年 1 月 12 日/12 January 1999	2002 年 7 月 5 日/05 July 2002	(1)

Arriel 2S1	1993 年 5 月 14 日/14 May 1993	1996 年 4 月 26 日/26 April 1996	(1)
Arriel 2S2	2003 年 12 月 4 日/04 December 2003	2005 年 12 月 6 日/06 December 2005	(1)
Arriel 2E	2010 年 6 月 30 日/30 June 2010	2012 年 12 月 17 日/17 December 2012	

备注 (1) : EASA 对上述型号的审定由欧盟规章 (EU) 748/2012 中第 3 款 1 (a) 章节授权, 基于法国民航局对这些型号的审定 (法国型号合格证 N°M19) 。

Note (1): EASA type certification for these models is granted in accordance with Article 3 paragraph1 (a) of EU Commission Regulation (EU) 748/2012, based on the DGAC France certification of these products (French Type Certificate N°M19).

第 3 部分 技术特性

Section 3 Technical Characteristics

1. 型号设计定义/Type Design Definition

型号/Model	件号/Part Number
Arriel 2B	0292005340
Arriel 2B1	0292005410
Arriel 2B1A	0292005470
Arriel 2D	0292000020
Arriel 2C	0292005360
Arriel 2C1	0292005390
Arriel 2C2	0292005420
Arriel 2S1	0292005310
Arriel 2S2	0292005450
Arriel 2E	0292000010

2. 描述/Description

Arriel 2 是涡轮发动机，包括轴流式进气道、轴流压气机、单级涡轮驱动的离心压气机、燃烧室、驱动位于后端减速齿轮箱的单级动力涡轮。位于前端的附件齿轮箱由燃气发生器驱动。发动机挂架是发动机型号定义的一部分。启动发电机不是发动机型号定义的一部分。

The Arriel 2 engine is a turboshaft engine consisting of an axial air intake, an axial compressor and a centrifugal compressor driven by a single stage turbine, a combustion chamber, and a single stage power turbine driving a reduction gearbox located at the rear. An accessory drive gearbox, driven by the gas generator, is located at the front. Mounts are part of the engine type definition. Starter-generator is not part of the engine type definition.

Arriel 2 发动机由电子控制系统控制，由具体型号而异（参见 III.7），包括单通道或者双通道带有标准或可选的机械备份。
The Arriel2 engine is controlled by an electronic engine control system, featuring a single or dual channel with standard or optional mechanical back-up depending on the model (see section III.7).

3. 设备/Equipment: 包含在型号设计定义中/included in Type Design Definition

4. 尺寸/Dimensions

型号/Model	长度(米)/Length(m)	高度(米)/Height(m)	宽度(米)/Width(m)
Arriel 2B	1.181	0.616	0.498
Arriel 2B1	1.140	0.616	0.491
Arriel 2B1A			
Arriel 2D	1.177	0.616	0.500
Arriel 2C	1.181	0.616	0.498
Arriel 2C1	1.015	0.576	0.498
Arriel 2C2			
Arriel 2S1	1.539	0.715	0.504
Arriel 2S2			0.497
Arriel 2E	1.182	0.616	0.508

5. 干重/Dry Weight

型号/Model	干重 (千克) /Dry Weight(Kg)	备注/Note
Arriel 2B	134.0	(1)
Arriel 2B1	132.2	
Arriel 2B1A	129.2	(2)
Arriel 2D	132.9	(2)
Arriel 2C	131.0	
Arriel 2C1	129.2	
Arriel 2C2	131.5	
Arriel 2S1	131.2	
Arriel 2S2	131.0	
Arriel 2E	139.2	

备注(1)针对 Arriel 2B, 2B1: 自由涡轮属于直升机的责任, 重量包括了自由涡轮组件

Note (1) for Arriel 2B, 2B1: Freewheel is under helicopter responsibility, and weight includes free wheel assembly

备注(2) 针对 Arriel 2B1A, 2D: 自由涡轮属于直升机的责任, 但重量不包括自由涡轮组件

Note (2) for Arriel 2B1A, 2D: Free wheel is under helicopter responsibility, but weight does not include free wheel assembly

6. 额定值/Ratings

额定功率 (千瓦) / Ratings-Power(kW)	最长持续时间/ maximum duration	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
30 分钟起飞(1)/30-minute Take-off(1)	30 分钟/minutes	n/a	n/a	n/a	598
起飞/Take-off	5 分钟/minutes	557	557	501	598
最大连续/Maximum Continuous	无限制/unlimited	543	543	501	598

额定功率 (千瓦) / Ratings-Power(kW)	最长持续时间 / maximum duration	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
30 秒 OEI/OEI-30sec	30 秒/seconds	704	718	750	735	771	753
2 分钟 OEI/OEI-2min	2 分钟/minutes	635	646	713	663	699	630
连续 OEI/OEI Continuous	无限制/unlimited	610	616	640	639	659	490
30 分钟起飞(1)/30-minute Take-off (1)	30 分钟/minutes	n/a	n/a	612	601	601	445
起飞/Take-off	5 分钟/minutes	531	581	612	601	601	445
最大连续/Maximum Continuous	无限制/unlimited	531	531	612	592	601	360

备注(1): 在先前的型号, 也被称为 HIP/SARM

Note (1): Also called HIP/SARM in earlier models

附加备注/Additional Notes:

上述性能数据对应于下列条件得到的最小值:

The performance values specified above correspond to minimum values defined under the following conditions:

- 所有型号, 压气机进气平面内的平均旋涡角小于或等于 0.5°
Mean swirl angle in the compressor air intake plane less than or equal to 0.5° for all models.
- 海平面标准大气条件, 试车台上/

- ISA conditions at sea level, on test bed
- 发动机安装了试车台进气与初级排气管/
Engine equipped with a test bed air intake and primary exhaust pipe
 - 没有引气/
No air bleed
 - 除了发动机运行需要的，没有其他附件提取功率/
No power drawn by any accessories other than those required for engine operation.
 - 输出轴转速：
Output shaft rotation speed:
6000 转/分钟 2B, 2B1, 2B1A, 2D, 2C, 2C1, 2C2, 2E 型号；
/ 6000 rpm for 2B, 2B1, 2B1A, 2D, 2C, 2C1, 2C2, 2E;
6409 转/分钟 2S1, 2S2 型号；
/ 6409rpmfor2S1, 2S2
 - 燃油低热值：43136 千焦/千克
Fuel Low Heat Value: 43136 kJ/kg

声明的功率值被先达到的限制值所限制：热学或者机械限制。对于起飞功率、30 分钟起飞功率、最大连续功率，机械限制对应于先达到的扭矩限制（在认可的机械限制与 EECU 扭矩限制之间）

Declared powers are limited by the first reached limit: either by thermal or mechanical limits. For Take-Off, 30-minuteTake-off, and Maximum Continuous the mechanical limits corresponds to the first torque limits reached between validated mechanical limit and EECU torque limit.

7. 控制系统/Control System

型号/Model	控制系统/Control System
Arriel 2B	单通道发动机电子控制系统，装有手动的备用控制 Single channel electronic engine control system with manual back-up control
Arriel 2B1, 2B1A	双通道发动机电子控制系统，装有可选的辅助备用控制 Dual channel electronic engine control system with optional auxiliary back-up control
Arriel 2D	双通道发动机电子控制系统，装有辅助备用控制 Dual channel electronic engine control system with auxiliary back-up control
Arriel 2C	单通道发动机电子控制系统，装有手动备用控制 Single channel electronic engine control system with manual back-up
Arriel 2C1,2C2	双通道发动机电子控制系统，装有可选的辅助备用控制 Dual channel electronic engine control system with optional auxiliary back-up control
Arriel 2S1	单通道发动机电子控制系统，装有手动备用控制 Single channel electronic engine control system with manual back-up control
Arriel 2S2	双通道发动机电子控制系统，装有辅助备用控制 Dual channel electronic engine control system with auxiliary back-up control
Arriel 2E	双通道发动机电子控制系统 Dual channel electronic engine control system

8. 油料（燃油，滑油，冷却剂，添加剂）/Fluids(Fuel, Oil, Coolant, Additives): 参见安装手册/See Installation Manual

9. 航空器附件驱动/Aircraft Accessory Drives

	起动发电机输出/Starter-generator Output						
型 号/Model	转动方向/ Rotation direction	转 速 /Rotation speed (rpm)	过载时最大 扭矩 /Maximum Torque in overload(da Nm)	最大静悬吊 /Maximum static overhang(da Nm)	保险轴分离 扭矩/Fuse shaft break away torque(da Nm)	最大持续轴功率/Maximum Permanent Shaft Power(kW)	
						双发/Twin engine	OEI 状态/OEI situation
Arriel 2B, 2B1, 2B1A	CW	11330	5.0	2.5	9.5	7.5	n/a
Arriel 2D			5.15			9.0	
Arriel 2C, 2C1	CW	11330	5.0	2.5	9.5	3.5	5.0
Arriel 2C2						5.0	
Arriel 2S1						7.5	
Arriel 2S2			7.5(1)			7.5	
Arriel 2E			12.0(2)				

备注(1): 对于 Arriel 2S2, 在特定的飞行条件下 OEI 计数的指导文件参见安装手册和维修手册中的适航限制章节。

Note (1):for Arriel 2S2: refer to Installation Manual and Airworthiness Limitation Section of the Maintenance Manual for specific instructions relative to OEI counting in certain flight conditions

备注(2): 对于 Arriel 2E, 失效状态下轴功率提取的详细信息参照安装与操作手册

Note (2): for Arriel2E: Refer to Installation and Operating Manual for detailed power shaft extraction in case of failure.

风扇冷却器驱动输出/Fan Cooler Drive Output							
型号/Model	转动方向 Rotation direction	转速 Rotation speed (rpm)	过载时最大扭 矩 /Maximum Torque in overload(da Nm)	最大静悬吊 /Maximum static overhang(da Nm)	保险轴分离扭 矩/Fuse shaft breakaway torque(da Nm)	最大持续轴功率 Maximum Permanent Shaft Power (kW)	
						双发/Twin engine	OEI 状态/OEI situation
Arriel 2C2	CCW	11452	1.0	1.5	10.0	1.5	1.5
Arriel 2S1,2S2		12253					

附加备注/Additional Notes:

- CW: 顺时针
CW: clockwise
- CCW: 逆时针
CCW: counter clockwise
- 从动力驱动装置的外面看附件动力驱动装置的旋转方向
The rotation direction of the power drives for the accessories is indicated considering the power drive seen from the outside.
- 从发动机后部看发动机转子的转动方向, 详细信息参见安装手册。
The rotation direction of the engine rotors is indicated with respect to viewing the engine from its rear end. For further details see Installation Manual.

10.最大允许的引气/Maximum Permissible Air Bleed Extraction

P3 引气给飞机用, 标准海平面条件最大引气量:

P3 air bleed for aircraft use. Maximum flow rate at standard sea level conditions:

除 Arriel 2D 与 2E 外的所有型号: 起飞功率下 100 克/秒, 最大连续功率下 98 克/秒

All Models except Arriel2D and 2E: 100g/s at Take-off rating and 98g/s at Maximum Continuous rating

Arriel 2D, 2E: 最大连续功率、起飞功率与 30 分钟起飞功率下都为 150 克/秒

Arriel2D, 2E: 150g/s at Maximum Continuous, Take-Off and 30-minute Take-off ratings.

详细信息参见安装手册

For further details, see Installation Manual.

第4部分 操作限制

Section 4 Operating Limitations

1. 温度限制/Temperature Limits

1.1 燃气发生器排气温度 (T45) 限制/Gas generator exhaust temperature (T45) limits

起动/on start-up :

T45(°C)	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
无限制时间/for an unlimited duration	750			
最大超温(<10s)/maximum overtemperature(<10s)	865			840

T45(°C)	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
无限制时间 for an unlimited duration	750					760
最大超温(<10s)/maximum overtemperature(<10s)	865		840	865	840	840

飞行中/in flight :

T45(°C)	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
30 分钟起飞(1) /30-minute Take-off(1)	n/a			962
起飞/Take-off	915			962
最大连续 /Maximum continuous	849			918
最大偶然超温(<20 秒)/Maximum in advertent overtemperature(<20sec)	941			994

T45(°C)	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
30 秒 OEI/OEI-30sec	1000		996	1000	996	1020
2 分钟 OEI/OEI-2min	941		944	941	944	1001
连续 OEI/OEI Continuous	912		926	912	926	959
30 分钟起飞(1)/30-minute Take-off(1)	n/a		929	912	930	932
起飞/Take-off	912		929	912	930	932
最大连续/Maximum continuous	877		891	877	893	915
最大偶然超温 (<20 秒)/Maximum inadvertent overtemperature(<20sec)	n/a					959(2)

备注(1): 在先前型号被称为 HIP/SARM; 备注(2): 所有发动机工作

Note (1): Also called HIP/SARM in earlier models; Note (2): all engines operating

1.2 燃油温度/Fuel temperature

最大温度/Maximum temperature :参见安装手册 see Installation Manual

对于正常与受限制燃油的定义, 参见安装手册

For definition of normal and restricted use fuels, see Installation Manual.

发动机起动最小温度/Minimum temperature for engine starting: 参见安装手册 see Installation Manual

使用防冰添加剂的燃油温度/Use of anti-icing additive for fuel temperature:

<-20°C for Arriel2B, 2B1, 2B1A, 2C, 2D, 2C1, 2S1, 2E

<-30°C for Arriel2C2, 2S2

1.3 滑油温度/Oil temperature

发动机起动最小滑油温度/Minimum oil temperature for engine starting:

对于粘滞度为 $5 \times 10^{-6} \text{ m}^2/\text{s}$ 的滑油/for oil with a $5 \times 10^{-6} \text{ m}^2/\text{s}$ cinematic viscosity:

发动机起动为 -30°C/For engine starting -30°C

加速时为 0°C/For power-up 0°C

对于粘滞度为 3 到 $3.9 \times 10^{-6} \text{ m}^2/\text{s}$ 的滑油/for oil with a 3 to $3.9 \times 10^{-6} \text{ m}^2/\text{s}$ cinematic viscosity:

对 2B、2B1、2B1A 型号发动机起动时为 -45°C, 对其他型号为 -50°C

/For engine starting -45°C for 2B, 2B1, 2B1A, -50°C for all other models

加速时为 -10°C / For power-up -10°C

最大滑油温度/Maximum oil temperature:

除了 Arriel 2D、2E 外的其他型号为 115°C/115°C for all Models except Arriel2D, and 2E.

对于 Arriel 2D、2E 型号为 117°C(测量位置与其他型号不同)

/117°C for Arriel 2D and 2E (measure data different location from other Models)

2. 转速限制/Speed Limits

2.1 燃气发生器转速(N1)/Gas generator speed (N1)

100%N1=52110 rpm

最小稳定 N1 转速/Minimum stabilized N1 speed

最小稳定 N1 转速/Minimum Stabilised N1 Speed	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
慢车模式转速范围/IDLE mode speed range	67% to 68% (34914 to 35435 rpm)			
飞行模式(手动控制模式)FLIGHT mode (manual control mode)	62% (32308rpm)			

最小稳定 N1 转速/Minimum Stabilised N1 Speed	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
慢车模式转速范围/IDLE mode speed range	67% to 68% (34914 to 35435 rpm)			48% to 52% (25013 to 27097 rpm)		62% (32308 rpm)
飞行模式(手动控制模式)/FLIGHT mode (manual control mode)	62% (32308 rpm)			62% (32308 rpm)		62% (32308 rpm)

最大稳定 N1 转速/Maximum stabilized N1 speed

最大稳定 N1 转速/Maximum Stabilised N1 Speed	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
30 分钟起飞/30-minute Take-off (1)	n/a			101.87% (53086 rpm)
起飞/Take-off	101.24%(52756 rpm)			101.87% (53086 rpm)
最大连续/Maximum continuous	97.24% (50672 rpm)			99.88% (52050 rpm)

备注(1): 在先前型号被称为 HIP/SARM/Note(1):Also called HIP/SARM in earlier models

最大稳定 N1 转速/Maximum Stabilised N1 Speed	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
30 秒 OEI/OEI-30sec	105.6% (55051 rpm)	105.52% (54986 rpm)	106.05% (55265 rpm)	105.8% (55156 rpm)	105.89% (55178 rpm)	105.90% (55186 rpm)
2 分钟 OEI/OEI-2min	102.1% (53192 rpm)	101.95% (53126 rpm)	102.24% (53275 rpm)	102.4% (53386 rpm)	102.38% (53348 rpm)	104.54% (54480 rpm)
连续 OEI/OEI Continuous	100.9% (52571 rpm)	100.76% (52506 rpm)	101.26% (52764 rpm)	101.2% (52756 rpm)	101.28% (52776 rpm)	101.90% (53102 rpm)
30 分钟起飞(1)/30-minute Take-off (1)	n/a	n/a	101.86%(53079 rpm)	101.2%(52756 rpm)	101.88%(53089 rpm)	100.78%(52518 rpm)
起飞/Take-off	101.1% (52660 rpm)	101.27% (52776 rpm)	101.86% (53079 rpm)	101.2% (52756 rpm)	101.88% (53089 rpm)	100.78% (52518 rpm)
最大连续/Maximum continuous	98.9%(51520 rpm)	99.09%(51637 rpm)	99.64%(51922 rpm)	99.1%(51616 rpm)	99.71%(51959 rpm)	98.96%(51572 rpm)

备注(1): 在先前型号被称为 HIP/SARM/Note(1): Also called HIP/SARM in earlier models

过渡转速/Transient speeds

过渡转速/Transient Speeds	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
最大偶然超速(<20s) /Maximum inadvertent over-speed(<20sec)	102.3%(53312 rpm)			102.97% (53658 rpm)

过渡转速/Transient Speeds	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
从慢车到飞行模式 /Transfer from IDLE to FLIGHT mode	n/a			52% to 62% (27097 to 32308 rpm) Note(1)		n/a
最大偶然超转(<20s) /Maximum inadvertent over-speed(<20sec)	102.3%(53312rpm)			102.3%(53312rpm) Note(2)	102.98%(53661rpm)Note(2)	101.90%(53102 rpm) Note(2)

备注(1):在此范围内避免连续操作

Note (1): avoid continuous operation in this range

备注(2): 所有发动机工作

Note (2): all engines operating

2.2 动力涡轮转速(N2)/Power turbine speed(N2)

对于除 Arriel 2D 与 2E 外的其他型号, 100% N2 对应 39095 rpm 的转速
/ 100%N2=39095 rpm for all Models except Arriel 2D and 2E.

对于 Arriel 2D 与 2E 型号, 100% N2 对应 39158 rpm 的转速 / 100%N2=39158 rpm for Arriel 2D and 2E

最小 N2 转速-飞行模式/Minimum N2 speed-Flight mode

最小 N2 转速-飞行模式 Minimum N2 Speed - Flight Mode	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
稳定功率开启/Stabilised Power on	90.5% (35381 rpm)			90.5% (35437 rpm)
稳定功率关闭/Stabilised Power off	85.0% (33230 rpm)			85% (33284 rpm)
过渡态 (小于 20 秒) /Transient(<20 sec)	68.0% (26584 rpm)			68% (26627 rpm)
备注/Notes	(1)	(1)	(1)&(2)	n/a

备注(1): 在发动机地面运转时, 避免在 87.0%到 90.5%(34012 到 35381 rpm)范围内持续运转

Note (1): During ground run avoid continuous operation in the range 87.0% to 90.5 % (34012 to 35381 rpm)

备注(2): 对于 2B1A 型号, 最小自动辅助备用模式退出界限值为 96.71%(37809 rpm)

Note (2): Minimum automatic auxiliary backup mode exit threshold is 96.71% (37809 rpm) for 2B1A

最小 N2 转速-飞行模式 /Minimum N2 Speed – Flight Mode	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
稳定功率开启/Stabilised Power on	90.5% (35381rpm)			90.5% (35381rpm)		90.5% (35437rpm)
稳定功率关闭/Stabilised Power off	85.0% (33230rpm)					85% (33284rpm)
过渡态（小于 20 秒） /Transient(<20 sec)	68.0% (26584rpm)					68% (26627rpm)

备注(1): 在发动机地面运转时, 避免在 87.0%到 90.5%(34012 到 35381rpm)范围内持续运转

Note (1): During ground run avoid continuous operation in the range 87.0% to 90.5 % (34012 to 35381 rpm)

最大 N2 转速-飞行模式/Maximum N2 speed-Flight mode

最大 N2 转速-飞行模式 /Maximum N2 Speed-Flight Mode	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
稳定态/Stabilised	108.5%(42418 rpm)			108.48% (42477 rpm)
最大偶然超转功率(小于 20 秒) 开启/Maximum inadvertent over-speed(<20sec)Power on	109.0%(42613 rpm)			108.8% (42613 rpm)
最大偶然超转功率(小于 20 秒) 关闭/Maximum inadvertent over-speed(<20sec)Power off	121.0%(47305 rpm)			119.0% (46598 rpm)
备注/Note	n/a	(1)		

备注(1):对于 2B1 型号, 最大自动辅助备用模式退出界限值为 115.0%(44960 rpm), 对于 2B1A 型号, 为 103.19%(40342

rpm), 对于 2D 型号, 为 115.0%(45032 rpm)

Note (1): Maximum automatic auxiliary backup mode exit threshold: 115.0 %(44960rpm) for 2B1, 103.19 %(40342rpm) for 2B1A, 115.0 %(45032rpm) for 2D

最大 N2 转速-飞行模式 /Maximum N2 Speed-Flight Mode	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
稳定态/Stabilised	108.5% (42418 rpm)					108.3% (42418 rpm)
最大偶然超转功率(小于 20 秒)开启/Maximum inadvertent over-speed(<20sec)Power on	109.0% (42613 rpm)				112.0% (43719 rpm)	119.0% (46598 rpm)
最大偶然超转功率(小于 20 秒)关闭/Maximum inadvertent over-speed(<20sec)Power off	121.0% (47305 rpm)					119.0% (46598 rpm)

4. 推力与扭矩限制 / Thrust and Torque Limits

N2 最小稳定转速下, 轴上最大扭矩

Maximum torque on shaft during operation at N2 minimum stabilized speed:

最大扭矩(da Nm)/Maximum Torque (da Nm)	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D(2)
30 分钟起飞(1)/30-minuteTake-off(1)	n/a			96.0
起飞/Take-off	91.3			96.0
最大连续/Maximum continuous	91.3			96.0
最大偶然超扭(小于 20 秒)/Maximum inadvertent over-torque(<20sec)	132.2			134.2
备注/Note	n/a			(2)

备注(1): 在先前型号被称为 HIP/SARM Note(1): Also called HIP/SARM in earlier models

备注(2):对于 2B1 型号, 自动辅助备用模式退出界限值为 91.3daNm, 对于 2B1A 型号, 为 71.4daNm, 对于 2D 型号, 为 101.8daNm。

Note (2): Automatic auxiliary backup mode exit threshold: 91.3 daNm for 2B1, 71.4daNm for 2B1A, 101.8 daNm for 2D。

最大扭矩(da Nm)/Maximum Torque (da Nm)	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
30 秒 OEI/OEI-30sec	116.8	118.7	119.3	120.3		119.8
2 分钟 OEI/OEI-2min	107.3	107.9	116.0	113.2		100.3
OEI 连续/OEI Continuous	103.0	101.55	101.8	102.5		78.0
在 N2 下, 30 秒 OEI 过渡最大扭矩(<10s)/OEI-30sec transient maximum torque (<10s) in case of under N2	n/a					
30 分钟起飞(1)/30-minute Take-off(1)	n/a		97.3	92.5		70.8
起飞/Take-off	92.5		97.3	92.5		70.8
最大连续/Maximum continuous	92.5		97.3	92.5		57.3
最大偶然超扭 (小于 20 秒)/Maximum inadvertent over-torque(<20sec)	132.2			143.0		119.8
备注/Note	(2)			n/a		(3)

备注(1): 在先前型号被称为 HIP/SARM

Note (1): Also called HIP/SARM in earlier models

备注(2): 对于 Arriel 2C、2C1、2C2 型号, 121.9daNm 的扭矩限制对于连续 OEI 已经经过验证, 无需特殊的维修措施。

Note (2): For Arriel2C, 2C1, 2C2, torque limit of 121.9daNm has been validated for unlimited continuous OEI usage with no specific maintenance actions.

备注(3): 对于 Arriel 2E, 下列扭矩限制必须经过验证, 无需特殊的维修措施:

无限制的 AEO 限制值为 99.9daNm, 无限制连续 OEI 限制值为 119.8daNm

Note (3): For Arriel2E, the following torque limits have been validated with no specific maintenance actions: 99.9 daNm for unlimited AEO usage, and 119.8 daNm for unlimited continuous OEI usage.

附加备注: 上述扭矩取决于, 经批准的发动机扭矩极限值与最小稳定 N2 转速下 EECU 扭矩率极限值中, 先达到的那个数值。

Additional Note: torques showed above correspond to the first reached torque limit between the validated engine torque limit and EECU torque law limit at minimum N2 stabilised.

5. 压力限制/Pressure Limits

4.1 滑油压力/Oil Pressure

压力限制/Pressure Limits (kPa)	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
最小滑油压力/Minimum Oil	110			(1)
最大滑油压力/Maximum Oil	600			(1)
正常工作范围/Normal Operating Range	200 to 600			(1)

压力限制/Pressure Limits (kPa)	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
最小滑油压力/Minimum Oil	110		170	110	170	(1)
最大滑油压力/Maximum Oil	600					(1)
正常工作范围/Normal Operating Range	200 to 600					(1)

备注(1): 参照相关安装与使用手册

Note (1): Refer to relevant Installation/Operating Manuals

4.2 燃油压力/fuel pressure

最小燃油压力/ Minimum fuel pressure:

- 正常操作, 除去起动阶段, 所有型号 (除去 Arriel 2D 与 2E) 的最小 (绝对) 油压由下列条件下最高的值确定:
Normal operation, i.e. excluding starting phase, the minimum (absolute) pressure is defined for all models except Arriel 2D and 2E, by the highest of the following conditions:

- 20kPa 绝对值/20kPa absolute,
- 35%大气压/35% of atmospheric pressure,
- 燃油蒸汽压加 7kPa/7kPa above the vapor pressure of the fuel used,
- 蒸汽体积与液体体积比为 0.3 时的燃油压力, 对于 Arriel 2D 与 2E 参照安装与使用手册 /Fuel pressure corresponding to a vapor volume over liquid volume ratio of 0.30. For Arriel 2D and 2E: Refer to Installation/Operating Manual

对于 Arriel 2D 与 2E 型号, 参照安装与使用手册/For Arriel 2D and 2E: Refer to Installation / Operating Manual

- 起动阶段或复飞 (相对油压)

During starting phase or at relight (relative pressure):

对于除 2S2 之外的所有型号: 25kPa 相对油压 (比大气压低 25 kPa)

For all models except 2S2: 25kPa relative pressure (i.e. 25kPa below atmospheric pressure)

对于 Arriel 2S2: 20kPa 相对油压 (比大气压低 20 kPa)

For Arriel 2S2: 20kPa relative pressure (i.e. 20kPa below atmospheric pressure)

最大燃油压力/Maximum fuel pressure:

- 在所有的阶段，对于除去 Arriel 2D 与 2E 外的所有型号，最大燃油压力值小于等于 150kpa（相对压力）。
Less than or equal to 150 kPa (relative pressure), in all operating phases, for all Models except Arriel 2D and 2E
- 在所有的阶段，对于 Arriel 2D 与 2E，最大燃油压力值小于等于 180kpa（相对压力）。
Less than or equal to 180 kPa (relative pressure), in all operating phases, for Arriel 2D and 2E

6. 安装假设/Installation Assumptions: 参见安装手册/see Installation Manual**7. 限时派遣/Time Limited Dispatch :**

发动机尚未获得与 CS-E 1030 相符的限时派遣的批准/The engine has not been approved for Time Limited Dispatch in accordance with CS-E 1030.

第5部分 操作和服务说明

Section 5 Operating and Service Instructions

文档/Document	Arriel 2B	Arriel 2B1	Arriel 2B1A	Arriel 2D
安装图纸和手册(1)/Installation Drawing and Manual(1)	X292 M00012	X292 N5 0012	X292 P4 0012	X292 R1 0012
性能手册/Performance Brochure	X292 M50019	X292 N5 0029	X292 P4 0019	AA049088
维护手册/ Maintenance Manual	X292 M54502	X292 N5 4502	X292 P4 4502	X292 R1 4502
维修手册/ Repair Manual	X292 R15002	X292R15001		X292 R1 5002
服务信与服务通告/Service Letters and Service Bulletins	参照 SB 与 SL 指南/refer to SB and SL directory			

备注(1): 操作指导文件在安装手册 15 章

Note (1) Operating Instructions are provided in Installation Manual Chapter 15

文档/Document	Arriel 2C	Arriel 2C1	Arriel 2C2	Arriel 2S1	Arriel 2S2	Arriel 2E
安装图纸和手册 (1)/Installation Drawing and Manual(1)	X292 M10012	X292 N40012	X292 N64041	X292 L00011	X292 P50012	X292R2 0012
性能手册/Performance Brochure	X292 M10019	X292 N40029	X292 N60029	X292 L00019	X292 P50019	AA056554
维护手册/ Maintenance Manual	X292 M14502	X292 N44502	X292 N64502	X292 L03012	X292 P54512	X292R2 3002
维修手册/ Repair Manual	X292 R15002	X292 R15002	X292 N65002	X292 R15002	X292 R15002	X292R1 5002
服务信与服务通告 /Service Letters and Service Bulletins	参照 SB 与 SL 指南/refer to SB and SL directory					

备注(1): 操作指导文件在安装手册 15 章

Note (1) Operating Instructions are provided in Installation Manual Chapter 15

第6部分 备注

Section 6 Notes

1. Arriel 2B, 2B1, 2B1A, 2D 的安装仅被批准用于单发情况
Arriel 2B, 2B1, 2B1A, 2D installation is approved for single-engine application only.
2. Arriel 2C, 2C1, 2C2, 2S1, 2S2 与 2E 的安装仅被批准用于多发情况
Arriel 2C, 2C1, 2C2, 2S1, 2S2 and 2E installation is approved for multi-engine application only
3. 进气/Air intake:
 - 直升机的进气设计应该可以预防瞬时吸入超过《安装与使用手册》中规定最大量的冰、雪和水。
The helicopter air intake design shall be such as to prevent instantaneous ingestion of ice, snow and water in excess of maximum quantities defined in the Installation and Operating Manual.
 - 必须安装《安装与使用手册》中规定的保护网，以限制吸入发动机外物的大小。
A protective grid as defined in the Installation and Operating Manual shall be installed to limit the ingestion of foreign matters in the engine.
4. Arriel 2B, 2B1, 2B1A, 2D 未被批准安装在欧直公司 AS350B3/EC130 型号直升机上（砂滤 P/N704A41650010），在结冰条件下飞行。
The Arriel 2B, 2B1, 2B1A, 2D are not approved for operation in icing conditions with Eurocopter AS350B3/EC130 sand filter P/N704A41650010.
5. 只有当 Arriel 2B1A 装配的直升机进气道参照 Z11MB1-6860-0，进气滤网参照 MB1-6850-30 时，才能在结冰条件下运行。
The Arriel 2B1A capability to operate in icing conditions (JARE780) has been addressed only when fitted with helicopter air intake reference Z11MB1-6860-0 for the inlet duct and Z11MB1-6850-30 for the inlet screen.
6. 当直升机安装下列进气系统零部件时，Arriel 2E 发动机满足规章要求，可以在结冰条件下运行。
The Arriel 2E is validated in icing conditions according to engine Airworthiness requirements with the following Aircraft air intake and inlet Part Numbers (P/N):
 - 进气保护外组件 LH assy P/N117-602351/Intake protection outer LH assy P/N117-602351
 - 进气保护内组件 RH assy P/N117-602401/Intake protection inside RH assy P/N117-602401
 - 进气保护内组件 LH assy P/N117-602371/Intake protection inside LH assy P/N117-602371
 - 进气保护外组件 RH assy P/N117-602421/Intake protection outer RH assy P/N117-602421
 - 进气部件 LHP/ND710M1010801/Air inlet LHP/ND710M1010801
 - 进气部件 RHP/ND710M2010801/Air inlet RHP/ND710M2010801
7. 电子控制部件不能安装在可能的火区内，安装条件在安装手册中有定义。
The electronic control unit must not be installed in a dedicated fire zone. The installation conditions are defined in the Installation Manual.
8. 对于 Arriel 2C, 2C1, 2C2, 2S1, 2S2 与 2E 型号，为了训练飞行机组在发动机失效的状态下更好地操纵飞机，电子控制系统提供了“训练功能”，该功能的具体细节按照安装手册
For Arriel 2C, 2C1, 2C2, 2S1, 2S2 and 2E the electronic control system provides a "TRAINING" function for training crews in an engine failure situation. Refer to the Installation Manual for the characteristics of this function.

9. 除 Arriel 2D 与 2E 外的所有型号，发动机电子控制系统的软件通过了 DO178A, level 1 的验证，Arriel 2D 与 2E 通过了 DO178B, level A 的验证。

The software of the EECU has been validated according to DO178A, level 1 for all Models except Arriel 2D and 2E, and DO178B, level A for the Arriel 2D and 2E.

10. 操作/启动/复飞包线在安装手册中提供。

The operating/starting/relight envelope is provided in the Installation Manual.

11. 电磁干扰/闪电（具体细节参照安装手册）

EMI/Lightning (Refer to Installation Manual for details.)

参照下列标准，相关等级已经经过验证。

Validated levels have been tested according to the following standards:

	除增加改装 TU169 (EECU Goodrich EMC101) 的 Arriel 2B1 外, 所有型号 All Models, except: /Arriel 2B1 with Modification TU169(EECU Goodrich EMC101); Arriel 2D/2E	增加改装 TU169 (EECU EECU Goodrich EMC101) 的 Arriel 2B1 型号 /Arriel 2B1 with: Modification TU169 (EECU Goodrich EMC101)	<u>Arriel 2D/2E</u>
感应信号敏感性 / Induced signal susceptibility	DO-160C 第 19 章, 类别 Z/DO-160C Section19, Category Z	DO-160D 第 19 章, 类别 Z/DO-160D Section19, Category Z	DO-160E 第 19 章, 类别 ZC /DO-160E Section 19, Category ZC
射频敏感性/ Radio Frequency susceptibility	DO-160C 第 20.4 章, 类别 Y, 美军标 MIL STD 461C-CS01, CS02, CS06, RS02, RS03 /DO-160C Section 20.4, Category Y; MIL STD 461C-CS01, CS02, CS06, RS02, RS03	DO-160D 第 20 章, 类别 Y/DO-160D Section 20, Category Y	传导/Conducted: DO-160E, 第 20 章, 类别 G, 详细信息参照相关安装与使用说明手册/ DO-160E, Section 20, Category G extended as per relevant Installation/Operating Manuals 辐射/Radiated: DO-160E 第 20 章, 类别 L/ DO-160E Section 20, Category L
射频能量发射/ Emission of Radio Frequency energy	DO-160C 第 21 章, 类别 Z, 美军标 MIL STD 461C-CE01, CE03, CE07, RE02/ DO-160C Section 21, Category Z; MIL STD 461C-CE01, CE03, CE07, RE02	DO-160D 第 21 章, 类别 H/ DO-160D Section21, Category H	DO-160E 第 21 章, 类别 H, 详细信息参照相关安装与使用说明手册/ DO-160E, Section 21, Category H extended as per relevant Installation/Operating Manuals
雷电感应瞬态敏感度/ Lightning induced transient	DO-160C 第 22 章/ DO-160C Section 22	DO-160D 第 22 章 /DO-160D Section 22	DO-160E 第 22 章 /DO-160E, Section 22

12. 对于 Arriel 2S1 与 2S2 型号, 动力涡轮超转停车装置起初是可选项, 现在变成了型号设计中必须的一部分, 且已经应用到了所有交付的发动机上。

For Arriel 2S1 and 2S2, the power turbine over-speed shut-down device, previously available as an option, is now part of the basic Type Design and has been fitted to all the delivered engines.

13. EASA 已经批准了持续适航文件中的适航限制章节, 该章节在《发动机维修手册》第 5 章“适航限制”中。

The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable "Engine Maintenance Manual" document, chapter 5 "Airworthiness Limitations".

14. 派遣构型分析/Dispatch Configuration Analysis:

除了 Arriel 2S1、2D 与 2E 外的其他所有型号/All Models except Arriel 2S1, 2D and 2E:

飞机起飞前, 所有发动机系统和设备必须运转正常。任何飞行过程中可能产生的系统或设备故障必须在下一次起飞之前排除。

All engine systems and equipment must be functional prior to aircraft take-off. Any engine system or equipment the failure of which would occur in flight shall be replaced or repaired prior to commencement of next flight.

Arriel 2S1: 发动机制造商对 Arriel 2S1 设备的派遣建议列在安装手册 §15 中。

Arriel 2S1: Engine manufacturer dispatch recommendations for equipment of Arriel 2S1 turboshaft engine are listed in Installation Manual §15.

Arriel 2D, 2E: 发动机派遣构型分析已经完成, 记录在安装手册的附件中。

Arriel 2D, 2E: Engine Dispatch Configuration analysis have been performed and are referenced in the relevant Installation Manuals.

15. Arriel 2S1 与 Arriel 2S2 发动机由位于法国的 TM 公司组装, 获得了位于美国的 TM USA (之前的 TM 发动机公司) 授权/Arriel 2S1 and Arriel 2S2 engines are assembled by Turboméca in France and under licence by Turboméca USA (formerly Turboméca Engine Corporation) in the USA.

在法国组装的发动机带有与法国规章相符合的标识牌/Engines assembled in France have an identification plate in accordance with the regulations applicable in France,

在美国组装的发动机带有与美国规章相符合的标识牌, 并且在产品序列号上加“TEC”或“TM USA”的前缀/Engines assembled in the USA have an identification plate in accordance with the FAR regulations and the prefix "TEC" or "TM USA" is added to the serial number

16. 从非民用使用的转化/Conversion from non civil use:

本条备注对于以下提及的型号都有效/This note is applicable to the following variants:

情况 1: TM 公司组装的 Arriel 2B, 2B1, 2B1A, 2C, 2C1, 2C2, 2S1, 2S2 型号发动机, 之前用于军队、海关、警方或其他类似部门的, 不在民航局方的管辖范围内。

Case 1: Arriel 2B, 2B1, 2B1A, 2C, 2C1, 2C2, 2S1, 2S2 engines originally assembled by Turboméca and having previously been used by an operator engaged in military, customs, police or similar services, and not under the control of a civil Authority.

情况 2: Arriel 2CPM 是 Arriel 2C 的军用衍生型, 安装在 (不局限于) 军用直升机。Arriel 2CPM 可以转换为 Arriel 2C 型号发动机。

Case 2: The Arriel 2CPM is a military variant of the Arriel 2C, known to be installed on, but not limited to, a military helicopter. Arriel 2C engines can be created by converting Arriel 2CPM engines.

这些发动机对欧洲规章的符合性必须经过查验之后才能颁发标准适航证。这些发动机的构型, 包括设计更改与修理, 不用必须满足 EASA 批准的型号定义, 在实际运行过程中有可能已经超出了 EASA 批准的限制。在给安装这些发动

机的飞机颁发标准适航证之前，必须给发动机颁发 EASA Form 1。这需要涵盖下列 TM 公司强制性服务通告：

The compliance of such engines with the European rules enabling issuance of an aircraft standard certificate of airworthiness must be checked. Their configuration, including design changes and repairs, does not necessarily conform to the type definition approved by EASA, and it is possible that in operation they have exceeded the limits approved by EASA. Before a standard certificate of airworthiness is issued to an aircraft in which such engines are installed, an EASA Form 1 must be issued for these engines. This requires incorporation of the following Turboméca Mandatory Service Bulletins:

Case 1: A292 72 2817 version B (or any subsequent approved issue).

Case 2: A292 72 2819 version A (or any subsequent approved issue).

- 结束 -

-END-