

中 国 民 用 航 空 局
Civil Aviation Administration of China

型号合格证数据单

TYPE CERTIFICATE DATA SHEET

编号/No:	TC0038A-DB
版次/Revision:	0
型号/Type:	啸龙 I(XLI)
批准人/App. By:	
日期/Date:	2019 年 10 月 10 日

本数据单是型号合格证(编号: TC0038A-DB)的一部分,它规定了取得此型号设计批准的产品符合《中国民用航空规章》有关适航要求的状态和限制。

This data sheet, which is part of Type Certificate No. TC0038A-DB, prescribes conditions and limitations under which the product for which the type design approval was issued meets the airworthiness requirements of the Chinese Civil Aviation Regulations.

型号合格证持有人/Type Certificate Holder:

哈尔滨振翼飞行器设计有限公司

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有效页清单/List of effective pages:

页数/Pages	1	2	3	4	5	6	7	8	9	10								
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第 1 部分 概述

SECTION 1 GENERAL

I. 概述/General

1. 机型/Model 啸龙 I(XLI)型自转旋翼机
2. 类别/Category: 轻型运动类/ Light Sports Aircraft Category (LSA)
3. 申请日期/Date of Application: 2019 年 05 月 14 日/14 May 2019

II. 审定基础/Certification Basis

CAAC审定基础是CCAR § 21.17、CCAR § 21.26、CCAR § 33.19(e)、CCAR § 33.49(a)(e)、AC-21-AA-2015-25R1、适用的美国试验和材料标准协会（ASTM）标准和CAAC专用要求。
CAAC certification basis is consisted of CCAR § 21.17, CCAR § 21.26, CCAR § 33.19(e), CCAR § 33.49(a)(e), AC-21-AA-2015-25R1, the applicable American Society for Testing and Materials (ASTM) standards and CAAC's special requirements.

1. 适航标准及其修正案水平/Airworthiness Standards and Amendment Levels

- F2339-17 轻型运动类飞机火花点火往复式发动机设计和制造标准/Standard Practice for Design and Manufacture of Reciprocating Spark Ignition Engines for Light Sport Aircraft;
- F2352-14 轻型运动类自转旋翼机设计和性能标准/Standard Specification for Design and Performance of Light Sport Gyroplane Aircraft;
- F2415-14 轻型运动类自转旋翼机持续适航标准/ Standard Practice for Continued System for Light Sport Gyroplane Aircraft t;
- F2483-12 轻型运动飞机维修通则和维修手册编制标准实施/ Standard Practice for Maintenance and the Development of Maintenance Manuals for Light Sport Aircraft;
- F2506-13 轻型运动类飞机螺旋桨设计和测试标准/ Standard Specification for Design and Testing of Light Sport Aircraft Propellers;

F2746-14 轻型运动类飞机驾驶员操作手册（POH）标准/ Standard Specification for Pilot's Operating Handbook (POH) for Light Sport Airplane;

F2972-15 轻型运动类飞机制造商质量保证体系标准/ Standard Specification for Light Sport Aircraft Manufacturer's Quality Assurance System.

2. 专用条件/Special Conditions:

无/None;

3. 等效安全/Equivalent Safety Findings:

无/None;

4. 豁免/Exemptions:

无/None

5. CAAC 的专用要求/CAAC's special requirements

5.1 与运行有关的要求/requirements related to operation :

(1) 高度表应以公制单位指示/The altimeter should be indicated in metric units;

(2) 按照 CCAR21 要求, 下列标记和标牌应至少有中文表述/According to CCAR21 requirements, the following markings and placards should be at least in Chinese:

- 机上所有对旅客进行的提示、警告和通知的文字标记和标牌/ Markings and placards for passenger usage;
- 机上所有向旅客或者机外营救人员指示应急出口和门的位置以及开启方法的文字 标记和标牌/ Markings and placards for passengers and rescue personal usage in case of emergency evacuation.

(3) 按照 CCAR21 要求, 机上所有座椅安装安全带和肩带/ According to CCAR21 requirements, the Seats should be Installed Safety Belt and Shoulder Harness.

5.2 应在飞行员操作手册中规定发动机使用的最低燃油等级(95 号以上无铅汽油)/CAAC requests operational condition for the fuel specification (95 octane Lead free) to be used, and should be defined in the Pilot Operating Handbook.

第 2 部分 技术特征和使用限制

SECTION 2 Technical Characteristics and Operational Limitations

I. 设计技术特征/Design Technical Characteristics

1. 型号设计数据/Type Design Data

啸龙 I(XLI)型自转旋翼机设计构型：啸龙 I(XLI)型自转旋翼机主图纸目录（XLI-MDL-001, A 版）

批准日期：2019 年 07 月 30 日

Approved on Model XL-I Design Data: Master Drawing List (MDL) on Model XL-I

(No.: XLI-MDL-001, Revision A dated 30 July 2019).

2. 自转旋翼机设计资料/Airframe Details on the Groplane

类型/Type	跷跷板式主旋翼，推力螺旋桨/Seesaw Rotor, and Thrust Propeller
座椅数/Number of Seats	2
结构材料/Construction Material	复合材料：环氧碳纤维机身和尾翼/Composite: Carbon Fuselage - Empennage Epoxy Resin
起落架/Undercarriage	前三点式固定/Fixed: Tricycle
尾翼/ Empennage	双垂直安定面和上部水平安定面/2 Vertical Fins ,and Top Fixed horizontal stabilizer
纵向操纵/Longitudinal Control	螺旋桨推力/ Propeller Thrust
横向操纵/Lateral Control	方向舵/Rudders
地面操纵/Steering on the ground	差动刹车协调转弯/Individual Braking
刹车/Braking	主轮刹车/Main Wheel Brakes Operating Together

3. 运行类别和使用限制/Type of Operation and Operating Limitations

运行类别/Type of Operation	昼间非特技目视飞行/Day VFR Non-Aerobatic Operation Only
允许机动/ Approved Manoeuvre	正常飞行中任何机动包括/Any manoeuvre necessary for normal flying including: -失速(除动态失速和加速失速外)/Stalling (except for dynamic or accelerated stall) -不超过 60°缓八字飞行/ Lazy eights with an angle of bank not more than 60° -急转跃升/Chandelles - 不超过 60° 的急转弯和小机动/Steep turns and similar maneuvers with an angle of bank not more than 60°
禁止机动/Prohibited maneuvers	-特技飞行/ Aerobatics -故意的自转下滑/ Intentional Gliding descent in autorotation -超过 60°侧滑角机动飞行/Flight maneuvers with an angle of bank more than 60°

4. 重量平衡/Weight and Balance

最大起飞重量/Maximum Take-Off Weight	560 kg (1234lbs)
最大着陆重量/Maximum Landing Weight	560 kg (1234lbs)
空机重量/Empty weight (including rotor)	324 kg (714lbs)
商载/Load capacity	236kg (520lbs)
重心前限/Most Forward CG	71 in (1.803m) aft of propeller flange
重心后限/Most rearward Position	75.26 in (1.91 m) aft of propeller flange
飞机基准/Aircraft Datum	100 in (2.54 m) forward of propeller flange

驾驶员座椅站位/Pilot Seat Station	71.4 in (1.81 m) inches aft of propeller flange
乘客座椅站位/Passengers Seat Station	71.4 in (1.81 m) inches aft of propeller flange
行李区站位/Baggage Zone Station	100 in (2.54 m) aft of propeller flange
机翼油箱站位/Fuel Station-Fuel Tank	99.75 in (2.53 m) aft of propeller flange

5. 水平测量方法/Levelling Means

纵向/Longitudinal	Spirit level placed across lower door frame
横向/Lateral	Spirit level placed across main spar carry through

6. 动力装置数据/Powerplant Data

发动机制造商/Engine Manufacturer	波兰 Aviation Artur Trendak
发动机型号/Engine Model	912RSTi/CA 912ULT
最低燃油等级/Minimum Fuel Grade	辛烷值不低于 95 的车用无铅汽油（或抗暴指数不 小于 91）；欧洲标准 EN228 Super & Super Plus/ MOGAS: Min. RON 95 / Min. AKI 91 Unleaded; EN 228 Super & Super Plus
发动机滑油/Engine Oil	Aeroshell Oil Sport Plus 10W40
燃油总容量/Total Fuel Capacity:	80 升/ 21.3 gallons
可用燃油量/Usable Fuel Capacity:	78 升/ 20.6 gallons
滑油量/Oil Capacity:	3 升/ 3 liters

6.1. 起飞操纵/Take-Off Operation

最大起飞功率/Maximum Take-off Power	100kw(135hp) at 5800 rpm (max.5 min)
最大连续功率/Maximum Continuous Power	93kw(125hp) at 5500 rpm
慢车转速/Idle	1800rpm
短距起飞功率/Short field take-off Power	100kw(135hp) at 5800 rpm (max.5 min)

6.2. 着陆操纵/ landing Operation

正常着陆功率/Normal landing Power	100kw(135hp) at 5800 rpm (max.5 min)
短距着陆功率/ Short field landing Power	100kw(135hp) at 5800 rpm (max.5 min)
迟缓着陆功率/ Balked landing Power	100kw(135hp) at 5800 rpm (max.5 min)

6.3. 温度限制/Temperature Limitations

汽缸头温度/Cylinder Head Temperature 最高 120°C (最大 5 分钟)/ Max. 120°C (Max. 5min)

滑油温度/Oil Temperature 最高 130°C (最大 5 分钟) /Max. 130°C (Max. 5min)

最低 50°C / Min. 50°C

7. 螺旋桨数据/Propeller Data

制造商/Manufacturer	KASPAR
型别/Model	KA2/3-LT
桨叶数/Number of Blades	3
直径/Diameter	68 吋/68 inches(1720 mm)
材料/Material	碳纤维/ Carbon fiber
桨距调定值/Pitch Setting	Nominal Pitch: Setting #3
螺旋桨最大转速/Maximum Propeller Rotational Speed	2380 rpm engine speed

8. 自转旋翼机性能概述/Summary of Performance on Groplane

禁超速度/ V_{NE} , Never Exceed Speed	210 km/h(113kt) IAS
最大结构巡航速度/ V_C , Maximum Structural Cruising Speed	175 km/h(94kt) IAS
机动速度/ V_A , Manoeuvring Speed	95 km/h(51kt) IAS
最小可操纵速度/ V_S , Minimum speed	50 km/h(32kt) IAS
起飞安全速度/ V_T , Take-Off Safety Speed	100 km/h(54kt) IAS
最终进近速度/ V_F , Final Approach Speed	90 km/h(49kt) IAS
最佳爬升角速度/ V_X , Best angle of climb speed	95 km/h(51kt) IAS
最佳爬升率速度/ V_Y , Best rate of climb speed	100 km/h(54kt) IAS
最大平飞速度(在海平面,最大起飞重量)/ V_H , Max Level Flight Speed(Sea Level & MTOW)	175 km/h(94kt) IAS
巡航速度(75%功率,最大起飞重量) / V_C , Cruising Speed(at 75% Power & MTOW)	140 km/h(75kt) IAS

起飞距离/Take-Off Distance

地面滑跑距离/Ground Roll Distance	150 m (490 ft)
总起飞距离/Total Take-Off Distance to 15m	300 m (1314 ft)

着陆距离/Landing Distance

地面滑跑距离/Ground Roll Distance	182 m (600 f t)
总着陆距离/Total Landing Distance from 15m	332 m (1420 ft)
起飞或着陆时最大迎风速度/ Maximum headwind Component for take-off and landing	60 km/h (32 kts, 17 m/s)
起飞或着陆时最大侧风速度/ Maximum Crosswind Component for take-off and landing	30 km/ (16 kts, 8 m/s)
使用升限 (密度高度)/ Service ceiling Altitude	3000 m (10000 ft)

9. 操纵面偏转范围/Control Surface Deflection

操纵面偏转范围的总容差为 $\pm 1.0^\circ$ /General Tolerance on Control Surface Deflection is $\pm 1.0^\circ$

操纵面/Control Surface	偏转测量结果/Deflection Measured Results
升降舵上偏/Elevator Up	19.0°
升降舵下偏/Elevator Down	2.0°
方向舵右偏/Rudder Right	25°
方向舵左偏/Rudder Left	25°

10. 操纵面配平/Control Surface Balancing

操纵面/Control Surface	铰链力矩限制/Limiting Hinge Moment
方向舵/Rudder	2.07 kg-m (15 ft-lbs)
升降舵/Elevator	2.90 kg-m (21 ft-lbs)

11. 自转旋翼机尺寸/Groplane Dimensions

旋翼直径/ Rotor diameter	8.60 m (28 ft 3 in)
桨盘面积/ Rotor surface	60.82m ² (654.66ft ²)

旋翼桨叶弦长/ Rotor blade chord	0.22 m
机体长度(不包括旋翼)/ Overall length (without rotor)	5.04 m
机体宽度/ Overall width	2.35 m
机舱宽度/Cockpit width	1.36 m
机体高度/ Overall height	2.87 m
主机轮迹线宽度/Track of wheels	2.20 m

12. 设备和标牌/Equipments and Placards

飞行员使用手册所要求的设备和标牌必须安装。

Equipments and placards required by the applicable Pilot's Operating Handbook must be installed.

13. 最小飞行机组/Minimum Flight Crew

1 名飞行员/1 Pilot

II. 运行和使用说明/Operating and Service Instructions

1. 飞行员使用手册/ Pilot's Operating Handbook

飞行员使用手册（TERCEL-POH-001-EN/TERCEL-AFM-001-EN，1版）及其补充和后续更改版本/Pilot's Operating Handbook（TERCEL-POH-001-EN/TERCEL-AFM-001-EN，Rev.1），and supplements, or later approved revisions.

2. 维护检查文件/Instructions for Maintenance and Inspection

飞行员使用手册（TERCEL-POH-001-EN/TERCEL-AFM-001-EN，1版）及其补充和后续更改版本/Pilot's Operating Handbook（TERCEL-POH-001-EN/TERCEL-AFM-001-EN，Rev.1），and supplements, or later approved revisions.

维护手册（TERCEL-AMM-001-EN/TERCEL-AMM-001-EN，1版）及其补充和后续更改版本/Maintenance Manual(TERCEL-AMM-001-EN/TERCEL-AMM-001-EN, Rev.1), and supplements, or later approved revisions.

912RSTi/CA 912ULT 发动机操作手册（LTZ-004-EN/LTZ-004-EN，1版）及其补充和后续更改版本/912RSTi/CA 912ULT OPERATORS MANUAL（LTZ-004-EN/LTZ-004-EN，Rev.1）and supplements, or Later Approved Revisions.

912RSTi/CA 912ULT 发动机维护手册（912RSTi/ZEN 1-005- EN，1 版）及其补充和后续更改版本/912 RSTi/CA 912ULT OPERATORS MANUAL（912RSTi/ZEN 1-005- EN，Rev.1） and supplements, or Later Approved Revisions.

KA2/3-LT 螺旋桨技术说明和使用指南及其补充和后续更改版本/KA2/3-LT Technical description and Operational instruction, and supplements, or Later Approved Revisions.

3. 产品序列号/Product Serial Number

产品序列号为 001 及其后续序号/Productions Serial Number 001 and later.

III 备注/ NOTES

备注 1/ Note 1:

维修计划文件见 XLI 型自转旋翼机维护手册维护手册（TERCEL-AMM-001-EN/TERCEL-AMM-001-EN，1 版）及其补充和后续更改版本/The maintenance schedule for the Modle XLI Groplane is that specified in Maintenance Manual（TERCEL-AMM-001-EN/TERCEL-AMM-001-EN，Rev.1）， and supplements, or later approved revisions.

备注 2 /Note 2:

强制检查见 XLI 型自转旋翼机维护手册（TERCEL-AMM-001-EN/TERCEL-AMM-001-EN，1 版）及其补充和后续更改版本的适航限制部分/Mandatory inspections are contained in the inspection section of the Modle XLI Groplane Maintenance Manual（TERCEL-AMM-001-EN/TERCEL-AMM-001-EN，Rev.1）， and supplements, or later approved revisions.