

型号认可证数据单

THE VALIDATION DATA SHEET

编号/No.: VTC0178E

版次/Revision: 1

型号/Type:

IO-360-ES

IO-360-AF

批准人/Approved By: Xu Chaoqun



职务/Title: Director General of CAAC-AAD

日期/Date: 2018 年 7 月 30 日

本数据单是型号认可证（编号：VTC0178E）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: VTC0188E), 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:

大陆发动机公司/Continental Motors Inc.

2039 Broad Street

Mobile, Alabama 36615

America

有效页清单/List of effective pages :

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

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

	中国民用航空总局认可数据单号、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	VTC0178E, 版次1, 2018年7月30日 VTC0178E, Revision 1, July 30, 2018	TCDS No. E1CE, 第17版, 2015年1月9日 TCDS No. E1CE, Revision 17, January 9, 2015 TCDS No. E1CE, 第13版, 1995年9月28日 TCDS No. E1CE, Revision 13, September 28, 1995
历史 History	VTC0178E, 版次0, 2007年1月19日 VTC0178E, Revision 0, January 19, 2007	TCDS No. E1CE, 第13版, 1995年9月28日 TCDS No. E1CE, Revision 13, September 28, 1995

注/Note: IO-360-AF 对应 TCDS No. E1CE 第 17 版/IO-360-AF is corresponding to Revision 17 of TCDS No. E1CE
IO-360-ES 对应 TCDS No. E1CE 第 13 版/IO-360-AF is corresponding to Revision 13 of TCDS No. E1CE

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: Continental Motors Inc.
2039 Broad Street
Mobile, Alabama 36615
USA
5. ETOPS: 不适用/NA
6. CAAC 专用要求/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

型号/Models	IO-360-ES	IO-360-AF
额定最大持续功率, 海平面压力下 ICAO 或者 ARDC 标准大气 Rating, ICAO or ARDC Standard Atmosphere Max Continuous hp-r.p.m at Critical altitude, ft. Sea Level Pressure Altitude	210-2800 F.T.	195-2800
海平面压力下, 5 分钟起飞功率、转速 Takeoff hp., 5 min, r.p.m full throttle at sea level pressure altitude	210-2800 F.T.	—
燃油 (航空汽油, 最低品级) Fuel (aviation gasoline, minimum grade)	100,100LL	ASTM D7547 (UL 91), ASTM7592 (UL94), ASTM D910 (91), (100), (100VLL), (100LL), B95/130 CIS, or RH95/130
滑油/Lubricating Oil	TCM Spec MHS No.24	SAE-J1899 标准润滑油或满足 CMI MHS-24 标准 J1966 滑油 Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24
缸径和冲程, 英寸/Bore and Stroke, in.	4.438 X 3.875	- -
排量, 立方英寸/Displacement, in ³	360	- -
压缩比/Compression ratio	8.5:1	7.5:1
重量(干重)磅/Weight (dry) pounds	320	335
重心位置 (发动机本体)/C.G. location (Basic Engine) 附件箱结合面向前, 英寸 Fwd. of front face accessory case, in 曲轴中心线下, 英寸 Below Crankshaft Centerline, in 曲轴中心线向 1-3-5 气缸侧 Beside crankshaft centerline toward the 1-3-5 side	7.08 0.45 -0.14	17.87 -0.67 -0.08
螺旋桨轴/Propeller Shaft	ARP-502 标准 1 型, 外径 4-7/8 英寸, 在 4 英寸直径上分部 6 个 1/2 英寸的螺栓孔 ARP-502, Type I flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle	- -
燃油喷射/Fuel Injection	TCM Injector 639230A3	CMI 公司燃油喷射系统 639289A183 或 FAA 最新批准的类型 CMI injection system 639289A183 or latest FAA approved version

双点火/Ignition, dual magnetos	见注释 10 (See NOTE 10)	--
正时/Timing, °BTC	20°	24°
火花塞/Spark plugs	见注释 9(See NOTE 9)	--
滑油量, 夸脱/Oil Sump Capacity, qt.	10 夸脱: 上仰或下俯 25° 时可用量为 7 夸脱/10:7 usable at 25° nose up and nose down attitude	8;仰角 26° , 俯角 18° 时可用容量 5 8; 5 usable at 26° noseup and 18° nosedown attitude
注释/Notes	注释 1 2,3,4,9 (除了 Tempest Aviation) ,10 / Note1 2,3,4, 9 (except Tempest Aviation) ,10	注释 1,注释 4 除真空泵及注释 235789 / Note 1 applicable except barrel temp, 2,3,4expect vacuum pump N/A,5,7,8,9,
审定基础/Certification Basis	1990 年 10 月 18 日颁证, FAA 33 部第 12 修正案 FAR 33 through Amendment 12 added October 18, 1990.	2014 年 9 月 20 日颁证, FAA33 部第 33 修正案 FAR 33 through Amendment 33 added September 20, 2014
生产基础/Production Basis	Production Certificate No. 508	--

"- -" 表示同上 / indicates "same as previous model"

"—"表示不适用 / indicates "does not apply"

注 1/NOTE 1.	最大许用温度/Maximum permissible temperature:	
	缸头 (卡口式热电偶) /Cylinder head bayonet thermocouple	460°F
	缸体/Cylinder barrel	310°F
	滑油进口/Oil inlet	240°F

注 2/NOTE 2.	燃油压力限制/Fuel Pressure Limits	
	对IO360-ES型/Applicable to Model IO-360-ES:	
	喷油泵进口压力/ Inlet to injection pump, p.s.i.	最小-3.5 psi / min. - minus 3.5
		最大+6 psi / max. - plus 6 p.s.i
	回油管路出口 / Outlet to vapor return line	最大+3.5psi / plus 3.5 p.s.i
	对IO360-AF型/Applicable to Model IO-360-AF:	
	喷油泵进口压力/ Inlet to injection pump,	最小-2 psi / min. - minus 2 p.s.i.
		最大+8 psi / max. - plus 8 p.s.i
	回油管路出口 / Outlet to vapor return line	最大+3.5psi / plus 3.5 p.s.i

注2 燃油压力限制 / Note 2 - Fuel Pressure Limits

对IO360-ES型/Applicable to Model IO-360-ES:

喷油泵进口压力/ Inlet to injection pump,

最小-3.5 psi / min. - minus 3.5 p.s.i.

最大+6 psi / max. - plus 6 p.s.i

回油管路出口 / Outlet to vapor return line

最大+3.5psi / plus 3.5 p.s.i

对IO360-AF型/Applicable to Model IO-360-AF:

喷油泵进口压力/ Inlet to injection pump,

最小-2 psi / min. - minus 2 p.s.i.

最大+8 psi / max. - plus 8 p.s.i

回油管路出口 / Outlet to vapor return line

最大+3.5psi / plus 3.5 p.s.i

注3 滑油压力限制 / Note 3 Oil Pressure Limits

2-4-6缸半箱体-正常运行 / 2-4-6 side – Normal

30-60 p.s.i / 30-60 p.s.i.

怠速 / Idle

10 p.s.i / 10 p.s.i.

最大（冷滑油）Maximun（cold oil）

100p.s.i

注4 以下附件传动装置安装规定可用: /Note 4 - The following accessory drive or mounting provisions are available:

对IO360-AF型/Applicable to Model IO-360-AF:

原附件/ Original Accessory	转向*/ Direction of Rotation*	发动机曲轴传 动比(转每分)/ Speed Ratio to Crankshaft	最大持续扭矩/ Maximum Torque Continuous(in-lb)	静力矩 /Static (in-lb)	最大悬挂力矩 英寸磅(牛米)/ Max Overhang Moment (In. lb)
**螺旋桨调速器/ Propeller Governor	顺/ C	1:1	29	825	50
转速计（可选机 械）/ Tachometer （Mech. optional）	逆/ CC	1.239	7	50	25
***可选装真空泵 /Vacuum pump Optional	逆/ CC	1.545:1	100	800	50
发电机 齿轮驱动/ generator	逆/ CC	2.035:1	60	600	50
滑油冷却器/ Oil Cooler	—	—	—	—	65
启动电机/Starter	可用型号CMI P/N 627841 (Delco-Remy P/N 1108234) / CMI P/N 627841 (Delco-Remy P/N 1108234) eligible				

*逆=逆时针，顺=顺时针。面对驱动附件/ C Clockwise viewing drive pad; CC – Counterclockwise

**改进型AND20010接口 / Pad Modified AND 20010

***转速改进型AND20000接口仅适用于ES，不适用AF / Pad Modified AND 20000 for speed, ES only; AF not applicable.

对IO360-ES型/Applicable to Model IO-360-ES:

附件/ Accessory	转向*/ Direction of Rotation*	曲轴传动比(转 每分)/ Speed Ratio to Crankshaft	最大扭矩/ Maximum Torque (英寸-磅/in-lbs)		最大悬垂力矩 Max Overhang Moment	衬垫构型/Pad Configuration
			连续 Cont.	静力矩/Static		
转速计/ Tachometer	CCW	0.5:1	7	50	25	AND20005

螺旋桨调速器/ Propeller Governor	CW	1:1	29	825	50	(Mod) AND 20010
磁电机 /Magnetos	CCW	1.5:1	-	-	-	特殊/Special
启动机/starter	CCW	48:1	200	400	60	特殊/Special
燃油泵/Fuel Pump	CW	1:1	25	680	60	特殊/Special
附件传动 /Accessory Drive (2)	CW	1.5:1	100	800	40	AND2000 or mod per MS 3325
交流发电机 齿 轮驱动/ generator gear drive	CCW	3:1	100	500	150	特殊/Special

* CW Clockwise /顺时针方向; CCW – Counterclockwise(viewing drive pad)/逆时针方向

注5 - 除进气系统外IO-360-ES发动机与IO-360-AF发动机相似。/ Note 5 The Model IO-360-ES is similar to the IO-360-AF except for the modified spider induction system

除起动电机发电机和可用燃料外IO-360-AF发动机与IO-360-ES发动机相似。/ The Model IO-360-AF is similar to the IO-360-ES except for starter and alternator, and eligible fuel

注6 - 发动机可以装备6001型滑油滤安装座。/ NOTE 6. These engines are eligible for installation of Eq. No. 6001 oil filter adapter.

注7 - 发动机曲轴都装有一个4 1/2阶减振块和一个6阶减振块。/ Note7 Models incorporate crankshaft with one 6th and one 4 1/2 order damper.

注8 - 发动机可以装备推力或者拉力螺旋桨或风扇，转动惯量最大20.in-lb sec²，悬臂惯量490 in.-lb，意味着悬臂重量可达70磅，臂长8英寸。/ Note 8 The IO-360-A, -AB, -C, -CB, -D, -DB, -G, -GB, -H, -HB, -J, -JB, -K, -KB, -ES are eligible for pusher and tractor operation and are approved for installation of propellers or propeller-fan combination having inertias up to 20.in-lb sec². and overhang moments up to 490 in.-lb. The maximum overhung weight and moment arm are 70 lb. and 8 in respectively.

注9 - 下列火花塞和/或CMI服务通告SIL03-2中批准的火花塞可以用于该发动机/ NOTE 9. The following spark plugs and/or those listed in CMI Service Information Letter SIL03-2 are approved on this engine:

AC	SR86, HSR86
Auto Lite	SH26, SH260
Champion	REM38E, REM38P, RMM38E, RHM38P
Smiths Industries	RSE-23-3R, RSH-23-3R
Tempest Aviation	UREM38E, URHM38E, URHM38S

注10 - 发动机重量根据所选部件不同而变化，具体请参考发动机安装手册 / NOTE 10. Installed engine weight shall vary, depending upon the accessories selected by the installer. See engine installation manual for calculation factors.

对IO-360-ES型/ Applicable to Model IO-360-ES:

重量变化如下所示的下列装有适用导线的磁电机可安装在相应的发动机上/The following magnetos with the appropriate harness are eligible on applicable engines at the indicated weight change.

磁电机型号/Magnetos Model	重量变化/weight Change
2个TCM/Bendix S6LN-25	无/None
2个TCM S6LSC-25	无/None

1个TCM S6LSC-25T (R) 和1个TCM S6LSC-25 (L)	无/None
2个Slick 6214	-1.4lb/磅
2个Slick 6314	-1.4lb/磅

结束
.... END....