DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E4SO
Revision 3
CONTINENTAL
TSIOL-550-A, -B, -C

July16, 2013

TYPE CERTIFICATE DATA SHEET NO. E4SO

Engines of models described herein conforming with this data sheet (which is part of Type Certificate No. E4SO) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate Holder	Continental Motors, Inc. P.O. Box 90 Mobile, Alabama 36601
Type Certificate Holder Record	Teledyne Continental Motors Ownership & name change as of April 19, 2011 (Continental Motors, Inc.)

Model	TSIOL-550-A	TSIOL-550-B
Type -	6HOL	— —
Rating, ICAO or ARDC Standard Atmosphere At Sea Level Pressure Altitude.		
Max. Continuous HP	350	325
Max. Continuous RPM	2700	2700
Max Continuous Man. Pr. In. Hg.	38.0	35.0
Max Continuous Critical Altitude - Feet	12,000	20,500
Fuel (Min. Grade Aviation Gasoline)	100 or 100LL	— —
Lubricating Oil	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	— —
Bore and Stroke - In.	5.25 x 4.25	— —
Displacement, Cu. In.	550	552
Compression Ratio	7.5:1	— —
Weight (Basic Engine, Dry) Lbs	402	557
Weight (Turbo, Dry) Lbs.	36	26
C.G. Location (Basic Engine)		
Fwd of Rear Face Accessory Case - In.	12.57	10.64
Below Crankshaft Centerline - In.	.73	1.94
Beside Crankshaft Centerline - In.	.69	.55 on 2-4-6 side
C. G. Location (Turbo)	See CMI Dwg. 649804	Included in Basic Engine
Propeller Shaft	Special Integral Flange 4-7/8 in. O.D. with six ½ in. bolt holes in 4 in. diameter circle.	— —
Fuel Injection	CMI Fuel Injection Assy 636134A38 or A25 or latest FAA approved version	CMI Fuel Injection Assy - 642903A34 or latest FAA approved version
Ignition - Dual Magnetos	CMI/TCM S6RN-201 and S6RN-205 pressurized with the appropriate pressurization system and ignition harness or S6RN-1201 and S6RN-1205 pressurized with the appropriate pressurization system and ignition harness	CMI/TCM S6RN-1225 or S6RC-1225
Timing °BTC	R-20°, L-20°	R-24°, L-24°
Spark Plugs	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision

Model	TSIOL-550-A	TSIOL-550-B
Oil Sump Capacity	12; 7.5 usable at 20° noseup, and 6.5 usable at 14.5° nosedown attitudes.	12; 3.5 unusable at 18° noseup and 4.0 unusable at 12° nosedown attitudes.

Model	TSIOL-550-C
Type	6HOL
Rating ICAO or ARDC	
Standard Atmosphere at Sea Level Pressure Altitude	
Max. Continuous HP	350
Max. continuous RPM	2600
Max. Continuous Man. Pr., In. Hg.	39.0
Max. Continuous Critical Altitude, Ft	12,000
Fuel (Min. Grade Aviation Gasoline)	100 or 100LL
Lubricating Oil	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24
Bore and Stroke	5.25 X 4.25
Displacement, Cu. In.	550
Compression Ratio	7.5:1
Weight (Basic Engine, Dry)	546
Weight (turbo., Dry)	36
C.G. Location (Basic Engine)	
Fwd. of Rear Face Acc. Case - In.	10.73
Below Crankshaft Centerline - In	2.10
Beside Crankshaft Centerline - In.	0.75, 2-4-6 Side
C. G. Location (Turbo)	Included in Basic Engine
Propeller Shaft	Special Integral Flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle.
Fuel Injection	CMI Injection system 654539A3 or latest FAA approved version
Ignition - Dual magnetos	Slick 6320 Pressurized
Timing °BTC	R-20°, L-20°
Spark Plugs	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision
Oil Sump Capacity - Qt.	12; 7.5 usable at 20° noseup and 6.5 usable at 14.5° nosedown

CERTIFICATION BASIS: FAR 33 Through Amendment 11, effective April 24, 1986.

PRODUCTION BASIS: Production Certificate No. 508

NOTE 1.	Maximum Permissible Temperatures	TSIOL-550-A, -C	TSIOL-550-B
	Coolant at Engine Outlet	250° F	270° F
	Oil at Engine Inlet	240° F	240° F
	Exhaust Gas Turbocharger Inlet Temperature (T.I.T.)	1750° F	1650° F continuous 1700° F 30 seconds maximum

NOTE 2.	Fuel Pressure Limits		
	Inlet to Injection Pump, Min.	Minus 2 psig	— —
	Max.	Plus 6 psig	— —
	Outlet to Vapor Return Line	3.5 psig Max	— —
	Oil Pressure Limits into Engine (2-4-6 gallery)	Normal 30-60 psig	— —
		Idle 10 psig	— —
		Max (Cold Oil) 100 psig	— —
	Turbocharger Oil Inlet	Normal 30-60 psig	— —
		Idle 10 psig	— —

— — indicates "same as preceding model."

NOTE 3. The following accessory drive or mounting provisions are available:

Accessory	Direction of Rotation*	Drive Ratio to Crankshaft	Max. Torque (In - Lbs.) Continuous	Static	Max. Overhang Moment (In. - Lbs.)
Tachometer	CCW	.5:1	7	50	25
Magneto	CCW	1.5:1	---	---	---
Starter	CCW	48:1	200	400	60
Alternator(Gear Dr.)	CCW	3:1	150	800	150
**Propeller Gov.	CW	1:1	29	825	50
Fuel Pump (Injection)	CW	1:1	25	680	60
***Accessory Drives (2)	CW	1.5:1	100	800	40

*"CW" - Clockwise and "CCW" - Counterclockwise (Viewing Drive Pad).

**This drive is a modified AND 20010 and shall be supplied with a cover.

***One drive eligible at 200 in.-lbs. continuous torque load provided the other does not exceed 100 in.-lbs. continuous torque load. These drives shall be supplied with covers.

NOTE 4. The TSIOL-550-A engine is similar to the TSIO-520-NB except the cylinder design has been revised to use liquid cooling. The coolant manifold for the coolant to and from the cylinders has been added to the top side of the cylinder head, and a coolant pump has been added to the starter adapter and driven by the starter adapter shaft. The engine is equipped with an AiResearch TA81 turbocharger. The oil cooler has been removed from the engine and will be mounted to the airframe.

The TSIOL-550-B engine is similar to the TSIO-520-UB except the cylinder design has been revised to use liquid cooling. The coolant manifold for the coolant to and from the cylinders has been added to the top side of the cylinder head, and a belt driven coolant pump has been added to the front of the engine and driven by the propeller shaft using sheaves. A coolant tank and coolant lines have also been added. The engine is equipped with an AiResearch TS06 turbocharger. The oil cooler has been removed from the engine and will be mounted to the airframe.

The TSIOL-550-C engine is similar to the TSIOL-550-A except the exhaust system and turbocharger bracket are similar to the TSIOL-550-B, modified to accept the TA81 turbocharger. Neither oil nor coolant radiators are furnished.

NOTE 5. The TSIOL-550-A and -C engines incorporate a crankshaft with two sixth, one fourth, and one fifth order dampers.

The TSIOL-550-B engine incorporates a crankshaft with two sixth, one fourth and one four-and-a-half order dampers.

NOTE 6. Maximum exhaust back pressure is to be 2 in. Hg. above ambient at the turbocharger exhaust outlet flange.

NOTE 7. Required equipment: TSIOL-550-A

(a) Unless otherwise substantiated by the installer, an oil separator having a capacity of one pint minimum and capable of separating an air flow of 2 CFM and an oil flow of 15 lbs/min at an oil temperature of 240° F shall be installed in the turbocharger oil return line.
(b) The engine is equipped with a full flow oil filter which incorporates a bypass valve. The oil filter is directly mounted on the oil pump housing.
(c) An exhaust system meeting the requirements of the CMI outline drawing no. 649790.

Required equipment: TSIOL-550-B, -C

(a) Unless otherwise substantiated by the installer, an oil separator having a capacity of one pint minimum and capable of separating an air flow of 2 CFM and an oil flow of 15 lbs/min at an oil temperature of 240 ° F shall be installed in the turbocharger oil return line.
(b) The engine is equipped with a full flow oil filter which incorporates a bypass valve. The oil filter is directly mounted on the oil pump housing.
(c) Oil Cooler - An oil cooler, remotely mounted, capable of 4.00 BTU/min/BHP heat rejection from oil and capable of 13.0 GPM (8.0 lbs/min) oil flow at a maximum of 40 psi pressure drop.

Note 7 - continued

(d) Radiator - A radiator, remotely mounted, capable of 10.5 BTU/min/BHP heat rejection from coolant and capable of 30.0 GPM (268 lbs/min) coolant flow at a maximum 40 psi pressure drop.

NOTE 8. A means of controlling maximum turbocharger discharge pressure, engine manifold pressure and proper placarding shall be provided to limit manifold pressure as outlined below.

Altitude (Ft)	Maximum Allowable Manifold Pressure , In. Hg.	
	TSIOL-550-A	TSIOL-550-C
12,000	38.0	39.0
25,000	31.0	31.0

A means of controlling maximum turbocharger discharge pressure, engine manifold pressure and proper placarding shall be provided to limit manifold pressure on the TSIOL-550-B as outlined below.

Altitude (ft)	Maximum Allowable Manifold Pressure In. Hg.
20500	35.0
26000	29.5

NOTE 9. Teledyne Crittenden alternator, P/N 649304 and drive coupling, P/N 646655 or latest FAA approved components are eligible for use on the TSIOL-550-Aand -C engine. Alternator compatibility with the aircraft must be accomplished by the installer.

Teledyne Crittenden alternator, P/N 641670 and drive coupling, P/N 640934 or latest FAA approved components are eligible for use on the TSIOL-550-B engine. Alternator compatibility with the aircraft must be accomplished by the installer.

NOTE 10. The coolant heat exchanger will be remotely mounted in compliance with FAR 23.1061 and must have a positive angle of slope in order to allow all entrained air to exit to the expansion tank. The maximum coolant flow through the heat exchanger will be 35 GPM. The coolant pump inlet pressure must be maintained at a minimum of 10 psi above the coolant boiling pressure to prevent cavitation

Coolant temperature limitations at the inlet to the coolant pump are listed below.

	TSIOL-550-A, -B	TSIOL-550-C
Maximum allowable	250°F	230°F
Recommended Take-off Minimum	150°F	150°F
Recommended Flight Operation	200°F	200°F

NOTE 11. Engine model numbers may include a suffix to define minor specification changes and/or accessory packages. Example: TSIOL-550-C(10).

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