

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E5S0
Revision 12

CONTINENTAL MOTORS, INC.
TSIO-550-A, TSIO-550-B,
TSIO-550-C, TSIO-550-E,
TSIO-550-G, TSIO-550-K,
TSIO-550-N, TSIOF-550-D,
TSIOF-550-J, TSIOF-550-K,
TSIOF-550-P

February 21, 2014

TYPE CERTIFICATE DATA SHEET NO. E5S0

Engines of models described herein conforming with this data sheet (which is part of Type Certificate No. E5S0) 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.
2039 South Broad Street
Mobile, Alabama 36615

Type Certificate Holder Record Teledyne Continental Motors
Ownership & name change as of April 19, 2011
(Continental Motors, Inc.)

Model	<u>TSIO-550-A</u>	<u>TSIO-550-B</u>
Type -	6HOA	--
Rating, ICAO or ARDC Standard Atmosphere At Sea Level Pressure Altitude.		
Max Continuous HP	360	350
Max Continuous RPM	2600	2700
Max Continuous Man. Pr. In. Hg.	41.0	38.0
Max Continuous Critical Altitude - Feet	12,000	--
Fuel (Min. Grade Aviation Gasoline)	100 or 100LL per ASTM D910	100 or 100LL per ASTM D910 or RH-95/130 (See Note 11)
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.	552	--
Compression Ratio	7.5:1	--
Weight (Basic Engine, Dry)	442	--
Weight (Turbo, Dry) Lbs.	28.2 (total of 2)	--

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	<u>TSIO-550-A</u>	<u>TSIO-550-B</u>
C.G. Location (Basic Engine)		
Fwd of Rear Face Accessory Case-In.	11.41	--
Below Crankshaft Centerline - In.	1.056	--
Beside Crankshaft Centerline - In.	0.365 on 2-4-6 side	--
C.G. Location (Turbo)	See CMI Dwg. 646618	See CMI Dwg. 653021
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	--
Ignition - Dual Magnetos	See Note 10	--
Timing °BTC	R-24°, L-24°	--
Spark Plugs	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision	--
Oil Sump Capacity Qts. Total	8; 5 usable at 16° nose up, and 4.5 usable at 10° nose down attitudes.	12; 7.5 usable at 20° nose up, and 6.5 usable at 14.5° nose down attitudes.
Applicable Notes	1 thru 12	--

Model	<u>TSIO-550-C</u>	<u>TSIO-550-E</u>
Type	6HOA	--
Rating, ICAO or ARDC		
Standard Atmosphere at Sea Level Pressure Altitude		
Max Continuous HP	310	350
Max Continuous RPM	2600	2700
Max Continuous Man. Pr. - In. Hg.	35.5	38.5
Critical Altitude - Feet	18,000	18,000
Fuel (Min. Grade Aviation Gasoline)	100 or 100 LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)	100 or 100 LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)
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.	552	--
Compression Ratio	7.5:1	--
Weight (Basic Engine, Dry) Lbs.	442	--
Weight (Turbo, Dry) Lbs.	28.2 (total of 2)	--
C. G. Location (Basic Engine)		
Fwd of Rear Face Accessory Case - In.	11.41	--
Below Crankshaft Centerline - in.	1.056	--
Beside Crankshaft Centerline - In.	0.365 on 2-4-6 side	--
C. G. Location (Turbo)	See CMI Dwg. 646618	--
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	--
Ignition	See Note 10	--
Timing - °BTC	R - 24°, L - 24°	--
Spark Plugs	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision	--
Oil Sump Capacity - Qts	8; 5 usable at 16° nose up and 4.5 usable at 10° nose down attitudes	12; 7.7 usable at 20° nose up and 6.5 usable at 14.5° nose down attitude.
Applicable Notes	1 thru 12	--

Model	<u>TSIO-550-G</u>	<u>TSIO-550-K</u>
Type	6HOA	6HOA
Rating, ICAO or ARDC Standard Atmosphere at Sea Level Pressure Altitude		
Max Continuous HP	310	315
Max Continuous RPM	2700	2500
Max Continuous Man. Pr. - In. Hg.	34.0	37.5 in Hg
Critical Altitude - Feet	22,000	18,000
Fuel (Min. Grade Aviation Gasoline)	100 or 100LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)	100 or 100LL per ASTM D910, RH95/130, or B95/130 CIS, ASTM D7592 (UL94) (See Note 11)
Lubricating Oil	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	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	5.25 X 4.25
Displacement - Cu. In.	552	552
Compression Ratio	7.5:1	7.5:1
Weight (Basic Engine, Dry) Lbs.	554	522
Weight (Turbo, Dry) Lbs.	28.2 (total of 2)	28.2 (total of 2)
C. G. Location (Basic Engine)		
Fwd of Rear Face Accessory Case - In.	11.41	12.66
Below Crankshaft Centerline - in.	1.056	1.30
Beside Crankshaft Centerline - In.	0.365 on the 2-4-6 side	0.12 on 1-3-5 side
C. G. Location (Turbo)	See CMI Dwg. 657154 Special Integral Flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle	See CMI Dwg. 657645 Special Integral Flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle
Propeller Shaft	CMI injection system	---
Fuel Injection	See Note 10	See Note 10
Ignition	R - 24°, L - 24°	R - 24°, L - 24°
Timing - °BTC	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision
Spark Plugs		
Oil Sump Capacity - Qts	8; 5.0 usable at 16° nose up and 4.5 usable at 10.0° nose down attitude.	8; 5.0 usable at 16° nose up and 4.5 usable at 10° nose down attitude.
Applicable Notes	1 thru 13	1 thru 12

Model	<u>TSIO-550-N</u>	<u>TSIOF-550-D</u>
Type	6HOA - 6 cylinder, air-cooled, turbocharged, horizontally opposed, fuel injected, spark ignition, four stroke, direct drive	6 cylinder, air-cooled, turbocharged, horizontally opposed, fuel injected, spark ignition, four stroke, direct drive. The engine incorporates a full authority digital engine control (FADEC) system to control the ignition and fuel injection functions.
Rating, ICAO or ARDC Standard Atmosphere at Sea Level Pressure Altitude		
Max Continuous HP	315	350
Max Continuous RPM	2500	2600
Max Continuous Man. Pr. - In. Hg.	37.5 in Hg	39.5 in Hg
Critical Altitude - Feet	18,000	22,000
Fuel (Min. Grade Aviation Gasoline)	100 or 100LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)	100 or 100LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)
Lubricating Oil	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	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	5.25 X 4.25
Displacement - Cu. In.	552	552
Compression Ratio	7.5:1	7.5:1
Weight (Basic Engine, Dry) Lbs.	554	558
Weight (Turbo, Dry) Lbs.	28.2 (total of 2)	35.2 (total of 2)
C. G. Location (Basic Engine)		
Fwd of Rear Face Accessory Case - In.	12.66	12.43
Below Crankshaft Centerline - in.	1.30	1.87
Beside Crankshaft Centerline - In.	0.12 on 1-3-5 side	0.18 on 1-3-5 side
C. G. Location (Turbo)	See CMI Dwg. 658233	See CMI Dwg. 657342
Propeller Shaft	Special Integral Flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle CMI Injection system	Special Integral Flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle CMI FADEC
Fuel Injection	See Note 10	CMI FADEC
Ignition	See Note 10	CMI FADEC
Timing - °BTC	R - 24°, L - 24°	Automatic
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
Oil Sump Capacity - Qts	8; 5.0 usable at 16° nose up and 4.5 usable at 10.0° nose down attitude.	8; 5.0 usable at 16° nose up and 4.5 usable at 10° nose down attitude.
Applicable Notes	1 thru 12	1 through 9, 11, 12, 14 thru 20

Model	<u>TSIOF-550-J</u>	<u>TSIOF-550-K</u>
Type	6 cylinder, air-cooled, turbocharged, horizontally opposed, fuel injected, spark ignition, four stroke, direct drive. The engine incorporates a full authority digital engine control (FADEC) system to control the ignition and fuel injection functions.	6 cylinder, air-cooled, turbocharged, horizontally opposed, fuel injected, spark ignition, four stroke, direct drive. The engine incorporates a full authority digital engine control (FADEC) system to control the ignition and fuel injection functions.
Rating, ICAO or ARDC Standard Atmosphere at Sea Level Pressure Altitude		
Max Continuous HP	350	315
Max Continuous RPM	2600	2500
Max Continuous Man. Pr. - In. Hg.	39.5 in Hg	37.5 in Hg
Critical Altitude - Feet	22,000	18,000
Fuel (Min. Grade Aviation Gasoline)	100 or 100LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)	100 or 100LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)
Lubricating Oil	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	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	5.25 X 4.25
Displacement - Cu. In.	552	552
Compression Ratio	7.5:1	7.5:1
Weight (Basic Engine, Dry) Lbs.	558	537.3
Weight (Turbo, Dry) Lbs.	35.2 (total of 2)	28.2 (total of 2)
C. G. Location (Basic Engine)		
Fwd of Rear Face Accessory Case - In.	12.43	12.66
Below Crankshaft Centerline - in.	1.87	1.30
Beside Crankshaft Centerline - In.	0.18 on 1-3-5 side	0.12 on 1-3-5 side
C. G. Location (Turbo)	See CMI Dwg. 657024	See CMI Dwg. 658456
Propeller Shaft	Special Integral Flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle	Special Integral Flange 4-7/8 in. O.D. with six 1/2 in. bolt holes in 4 in. diameter circle
Fuel Injection	CMI FADEC	CMI FADEC
Ignition	CMI FADEC	CMI FADEC
Timing - °BTC	Automatic	Automatic
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
Oil Sump Capacity - Qts	8; 5.0 usable at 16° nose up and 4.5 usable at 10° nose down attitude.	8; 5.0 usable at 16° nose up and 4.5 usable at 10° nose down attitude.
Applicable Notes	1 through 9, 11, 12, 14 thru 20	1 through 9, 11, 12, 14 thru 20

Model	<u>TSIOF-550-P</u>
Type	6 cylinder, air-cooled, turbocharged, horizontally opposed, fuel injected, spark ignition, four stroke, direct drive. The engine incorporates a full authority digital engine control (FADEC) system to control the ignition and fuel injection functions.
Rating, ICAO or ARDC Standard Atmosphere at Sea Level Pressure Altitude	
Max Continuous HP	315
Max Continuous RPM	2500
Max Continuous Man. Pr. - In. Hg.	37.5 in Hg
Critical Altitude - Feet	28,000
Fuel (Min. Grade Aviation Gasoline)	100 or 100LL per ASTM D910, RH95/130, or B95/130 CIS (See Note 11)
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.	552
Compression Ratio	7.5:1
Weight (Basic Engine, Dry) Lbs.	552
Weight (Turbo, Dry) Lbs.	32
C. G. Location (Basic Engine)	
Fwd of Rear Face Accessory Case - In.	11.6
Below Crankshaft Centerline - in.	2.0
Beside Crankshaft Centerline - In.	0.86 on 2-4-6 side
C. G. Location (Turbo)	Included in Basic Engine CG
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 FADEC
Ignition	CMI FADEC
Timing - °BTC	Automatic
Spark Plugs	Ref. CMI Service Information Letter SIL03-2 or latest FAA approved revision
Oil Sump Capacity - Qts	12; 8.5 usable at 18° nose up and 8 usable at 12° nose down attitude.
Applicable Notes	1 through 9, 11 thru 20
Certification Basis:	TSIO-550- A - FAR 33 through Amendment 9 effective October 14, 1980 TSIO-550-B - FAR 33 through Amendment 12 effective September 2, 1988 TSIO-550-C and -E - FAR 33 through Amendment 13 effective August 18, 1990 TSIO-550-G - FAR 33 through Amendment 20 effective September 14, 2000 TSIOF-550-J - FAR 33 through Amendment 30 effective November 2, 2009 TSIO-550-K - FAR 33 through Amendment 24 effective November 5, 2007 TSIOF-550-D - FAR 33 through Amendment 30 effective November 2, 2009 TSIOF-550-K - FAR 33 through Amendment 30 effective November 2, 2009 TSIO-550-N - FAR 33 through Amendment 30 effective November 2, 2009 TSIOF-550-P - FAR 33 through Amendment 30 effective November 2, 2009

Production Basis - Production Certificate No. 508

Note 1. Maximum Permissible Temperatures

Cylinder Head	460°F 420°F (TSIO-550-K – For operation with ASTM D7592 (UL94) fuel grade or UL94/100/100LL fuel grade mix)
Oil Inlet	240°F
Exhaust Gas - Turbocharger Inlet Temperature (TIT)	
Continuous Operation	1750°F (all except -P model) 1650°F (-P model below 18,000 feet pressure altitude, see Note 13)
30 Second Limit	1850°F (all except -P model)
60 Second Limit	1713°F (-P model only) Manifold
Inlet Temperature	
Limitation applies to the TSIO-550-K – for operation with ASTM D7592 (UL94) fuel grade or UL94/100/100LL fuel grade mix.	
Maximum Continuous Power	130°F (2500 RPM @ 37.5 in Hg (315 BHP))
Maximum Recommended Cruise Power	115°F (2500 RPM @ 27.0 in Hg (232 BHP))

Note 2. Fuel Pressure Limits

Inlet to Injection Pump,	Min - Min - Max -	Minus 2 psig Minus 3.5 psig (TSIOF-550-D, -J, -K, -P only) Plus 6 psig
Outlet to Vapor Return Line		3.5 psig Max Note: Not applicable to TSIOF-550-D, -J, -K, -P
Note 3. Oil Pressure Limits, at Outlet	Normal Idle Max (Cold Oil)	30-60 psig 10 psig 100 psig
Turbocharger Oil Inlet	Normal Idle	30-60 psig 10 psig

Note 4. The following accessory drive or mounting provisions are available for the TSIO-550/TSIOF-550 series engines.

Accessory	Direction of Rotation*	Drive Ratio to Crankshaft	Max. Torque (In.-Lbs.)		Max. Overhang Moment (In.-Lbs.)
			Cont	Static	
Tachometer	CCW	0.5:1	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. Type AND 20000.

*** 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 5. The TSIO-550-A and -C engines are similar to the TSIO-520-BE except the hardware required to increase the displacement, namely the crankshaft and pistons. The two stage fuel pump has been replaced by a single stage fuel pump on the TSIO-550-C.

The TSIO-550-B engine is similar to the TSIO-550-A except the TSIO-550-B engine has a 12 quart sump. The sonic venturis have been removed, and the two stage fuel pump has been replaced by a single stage fuel pump.

The TSIO-550-E engine is similar to the TSIO-550-C except the oil sump and maximum continuous power rating are the same as the TSIO-550-B.

The TSIO-550-G engine is similar to the TSIO-550-E except for smaller surface area intercoolers, the oil sump capacity and the maximum continuous power rating.

The TSIOF-550-J engine is similar to the TSIO-550-E except for FADEC fuel injection and ignition control, turbochargers, tapered cylinder barrel fins, oil sump and capacity, maximum continuous speed and manifold pressure ratings.

The TSIO-550-K engine is similar to the TSIO-550-E except for oil sump and capacity, maximum continuous power, manifold pressure, and speed ratings, and tapered cylinder barrel fins.

The TSIOF-550-D engine is similar to the TSIOF-550-J except for the exhaust system and low voltage harness.

The TSIOF-550-K engine is similar to the TSIO-550-K except for FADEC fuel injection and ignition control.

The TSIO-550-N engine is similar to the TSIO-550-K except for exhaust system, turbocharger mount brackets and maximum continuous power rating.

The TSIOF-550-P engines are similar to the TSIOF-550-K except for single turbocharger and intercooler, oil sump Throttle body, exhaust system and turbocharger bracket.

Note 6. The TSIO-550 and TSIOF-550 engines incorporate a crankshaft with two sixth, one fourth, and one fifth order dampers.

Note 7. Maximum exhaust back pressure shall not exceed 2 in. Hg. above ambient at the turbocharger exhaust outlet flange.

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 except as stated in Notes 11 and 13.

Maximum Allowable Manifold Pressure - In. Hg.

<u>Altitude (FT.)</u>	<u>TSIO-550-A</u>	<u>TSIO-550-B</u>	<u>TSIO-550-C</u>	<u>TSIO-550-E</u>	<u>TSIO-550-G</u>	<u>TSIO-550-K</u>	<u>TSIO-550-N</u>
12,000	41.0	38.0 (Note 11)					
18,000			35.5 (Note 11)	38.5 (Note 11)		37.5 (Note 11)	37.5 (Note 11)
20,000	33.0						
22,000					34.0 (Note 11 & 13)		
25,000		31.0 (Note 11)					

<u>Altitude (FT.)</u>	<u>TSIOF-550-D</u>	<u>TSIOF-550-J</u>	<u>TSIOF-550-K</u>	<u>TSIOF-550-P</u>
12,000				
18,000			37.5 (Note 11)	37.5 (Note 11)
20,000				
22,000	39.5 (Note 11)	39.5 (Note 11)		
25,000				

Note 9. The engine is provided with a gear driven alternator, optional provisions for a front mounted, belt-driven alternator, and for a belt-driven refrigerant compressor are available. The compatibility of these options must be determined by the installer.

Note 10. The following magnetos are suitable for use on these engines.

CMI/TCM S6RSC-25P or Slick Champion 6220 or 6320 pressurized with appropriate pressurization system and ignition harness.

- Note 11. When operating with 95/130 grade fuel, the altitude limitation for maximum continuous power and speed is 3000 meters (9840 feet) and, for maximum recommended cruise power and speed is 6000 meters (19680 feet).
- Note 12. Engine model numbers may include a suffix to define minor specification changes and/or accessory packages.
Example: TSIO-550-C(10).
- Note 13. The Model TSIO-550-G is limited to 1675°F maximum TIT at altitudes at and above 22,000 feet.
Model TSIOF-550-P: Reference Installation & Operation Manual, OI-26, Section 205 for operations at and Above 18,000 feet pressure altitude.
- Note 14. FADEC equipped engine models are only available as 24 Volt systems.
- Note 15. The electronic control system for the TSIOF-550-D, -J, and -K, and -P contains level “B” software which has been shown to meet the requirements for single and multi engine aircraft regardless of takeoff weight. The following electronic control units have been approved for use with the corresponding engines:

Engine Model	TSIOF-550-D	TSIOF-550-J	TSIOF-550-K	TSIOF-550-P
ECU (cylinder 1/2)	800874-1	800874-1	800874-1	800874-1
ECU (cylinder 3/4)	800874-2	800874-2	800874-2	800874-2
ECU (cylinder 5/6)	800874-3	800874-3	800874-3	800874-3

CMI FADEC equipped 6 cylinder engines employ three electronic control units (ECUs); one for each cylinder pair. The dash 1 (-1) unit controls the opposing cylinders 1 and 2; the dash 2 (-2) unit controls the opposing cylinders 3 and 4; and the dash 3 (-3) unit controls the opposing cylinders 5 and 6.

- Note 16. The electronic control system must be supplied with two isolated sources of electrical power which meet the reliability requirements set forth in the operation and installation manual. One of these power sources may be the aircraft primary bus. The second power source must be isolated from the aircraft bus and, if supported by a battery, this battery cannot be the battery which is utilized for engine starting. The use of an essential bus or dedicated backup battery is an acceptable method of providing secondary power, as long as this source has sufficient capacity to meet aircraft certification requirements.
- Note 17. If a backup battery is used as a secondary source of electrical power for the electronic control system, the backup battery must be replaced at the interval specified in the Maintenance and Overhaul Manual.
- Note 18. Installation and evaluation of the Health Status Annunciator (H.S.A.) display is subject to the requirements established by the certification basis of the aircraft.
- Note 19. Takeoff is prohibited with annunciated faults shown on the Health Status Annunciator (H.S.A.).
- Note 20. The TSIOF-550-D, -J, -K, -P models provides optional through firewall mounting arrangement for the FADEC ECUs. This mounting arrangement has not been shown to comply with the 14 CFR 23, 25, 27, and 29 requirements for flammable fluid and vapor containment, nor fireproof capabilities.

...END....