DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E7CE
Revision 18

CONTINENTAL
GTSIO-520-C, -D, -E,
-F, -H, -K, -L, -M -N

November 1, 2011

TYPE CERTIFICATE DATA SHEET NO. E7CE

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. E7CE) 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 Civil Air 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 P.O. 90 Mobile, Alabama 36601
Type Certificate Holder Record	Teledyne Continental Motors Ownership & name change as of April 19, 2011 (Continental Motors, Inc.)

Model	GTSIO-520-C	GTSIO-520-D	GTSIO-520-E	GTSIO-520-H
Type	6HOGA	- - -	- - -	- - -
Reduction gear ratio	.750:1	.667:1	- - -	- - -
Rating, ICAO or ARDC Standard Atmosphere				
Max. continuous hp, rpm, in Hg. at	340-3200-34.5	375-3400 39.5	375-3400 37.5	375-3400-39.5
Critical altitude	16,000	16,000	16,000	18,000
Sea level pressure altitude	340-3200-34.5	375-3400-39.5	375-3400-37.5	- - -
Takeoff hp, 5 min., rpm, full throttle at sea level pressure altitude	340-3200-34.5	375-3400-39.5	375-3400-37.5	- - -
Fuel (min. grade aviation gasoline)	100/100LL	- - -	- - -	- - -
Lubricating oil, engine	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	- - -	- - -	- - -
Lubricating oil., turbo	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	- - -	- - -	- - -
Bore and stroke, in.	5.250 x 4.00	- - -	- - -	- - -
Displacement, cu. in.	520	- - -	- - -	- - -
Compression ratio	7.5:1	- - -	- - -	- - -
Weight (basic engine, dry), lb.	482	516	- - -	- - -
Weight (turbo, dry), lb.	38	34	- - -	- - -
C.G. location (basic engine)				
Fwd. of rear face acc. case, in.	13.92	12.82	- - -	- - -

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Model	GTSIO-520-C	GTSIO-520-D	GTSIO-520-E	GTSIO-520-H
Above or below crankshaft, centerline in.	.42 below	.10 above	- - -	- - -
Beside crankshaft centerline toward 1-3-5 side, in.	.50	.24	- - -	- - -
C.G. location (turbo)	See instl. dwg. 632380	On shaft cent 2.73 in. toward compressor from centerline of turbine inlet	- - -	- - -
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 injection system (Eq. No. 6036) or latest FAA approved version	CMI injection system (Eq. Nos. 6148 or 6149) or latest FAA approved version	CMI injection system (Eq. No. 6273) or latest FAA approved version	CMI injection system P/N 637652A1 or latest FAA approved version
Ignition, dual magnetos	One CMI/TCM/Scintilla S6LN-201 and one S6LN-205 or one CMI/TCM S6LSC-201 and one S6LSC-205	One CMI/TCM/Scintilla S6LN-1201 and one S6LN-1205	- - -	- - -
Timing, °BTC	22	20	- - -	- - -
Spark plugs	See NOTE 4	- - -	- - -	- - -
Oil sump capacity, qt.	13.9 usable at 16° noseup and 16° nosedown attitudes	- - -	- - -	- - -
Applicable NOTES	1, 2, 3, 4, 5, 8	1, 2, 3, 4, 5, 6, 8	- - -	- - -

"- - -" indicates "same as previous model"
"---" indicates "not applicable"

Model	GTSIO-520-F, -K	GTSIO-520-L	GTSIO-520-M	GTSIO-520-N
Type	6HOGA	- - -	- - -	- - -
Reduction gear ratio	.667:1	- - -	- - -	- - -
Rating, ICAO or ARDC Standard Atmosphere				
Max. continuous hp, rpm, in Hg. at	435-3400-44.5	375-3350.39.0	375-3350-40.0	375-3350-39.0
Critical altitude	19,000	20,000	16,000	20,000
Sea level pressure altitude	435-3400-44.5	375-3350-39.0	375-3350-40.0	375-3350-39.0
Takeoff hp, 5 min., rpm, full throttle at sea level pressure altitude	435-3400-44.5	375-3350-39.0	375.3350-40.0	375-3350-39.0
Fuel (min. grade aviation gasoline)	100/100LL	- - -	- - -	- - -
Lubricating oil, engine	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	- - -	- - -	- - -
Lubricating oil., turbo	Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24	- - -	- - -	- - -

Model	GTSIO-520-F, -K	GTSIO-520-L	GTSIO-520-M	GTSIO-520-N
Bore and stroke, in.	5.250 x 4.00	- - -	- - -	- - -
Displacement, cu. in.	520	- - -	- - -	- - -
Compression ratio	7.5:1	- - -	- - -	- - -
Weight (basic engine, dry), lb.	516	547	545	556.75
Weight (turbo, dry), lb.	34	36	- - -	- - -
C.G. location (basic engine)				
Fwd. of rear face acc. case, in.	9.81	12.82	- - -	- - -
Above or below crankshaft, centerline in.	.74 above	.10 above	- - -	- - -
Beside crankshaft centerline toward 1-3-5 side, in.	.671	.24	- - -	- - -
C.G. location (turbo)	On shaft center 2.73 in. toward compressor from centerline of turbine inlet	On shaft center 1.75 in. toward compressor from centerline of turbine inlet	- - -	- - -
Propeller shaft	ARP880A	ARP 880	- - -	- - -
Fuel injection	CMI injection system Model Y66A or latest FAA approved version	CMI injection system P/N 639623A3-Rt. P/N 639624A-3 Left or latest FAA approved version	CMI injection system P/N 639624A4 or latest FAA approved version	CMI injection system P/N 642723-A1-left P/N 643723 A2-right or latest FAA approved version
Ignition, dual magnetos	One CMI/TCM/Scintilla S6LN-1201 and one S6LN-1205	- - -	- - -	- - -
Timing, °BTC	20	24	- - -	- - -
Spark plugs	See NOTE 4.	- - -	- - -	- - -
Oil sump capacity, qt.	13.6; 8.6 usable at 20° noseup; 7.8 usable at 10°	13.9 usable at 16° noseup and 16° nosedown attitudes	- - -	- - -
Applicable Notes	1, 2, 3, 4, 5, 6, 8	1, 2, 3, 4, 5, 6, 7, 8	- - -	- - -

"- - -" indicates "same as previous model" "---" indicates "not applicable"

Certification Basis

CAR 13 effective June 15, 1956, as amended by 13-1 through 13-4.
Application for type certificate dated November 30, 1962.
Type Certificate No. E7CE issued July 24, 1964, for Model GTSIO-520-C; -D added February 27, 1967; -E added April 1, 1968; -H added April 28, 1970; -F added May 12, 1971; -K added July 31, 1974; -L added June 27, 1975; -M added January 7, 1976; -N added May 15, 1980. FAR 33.8, amendment 33-3, effective March 4, 1967 applicable to the GTSIO-520-L and -M, and -N.

Production Basis

Production Certificate No. 7. Production Certificate No. 508.

NOTE 1. Maximum permissible temperatures:

Cylinder head bayonet, thermocouple	460° F.
Cylinder barrel	310° F, measured per CMI dwg. 630361
Oil inlet	240° F.

NOTE 2.

Fuel pressure limits:		-C, -D, -E, -H, -L, -M, -N	-F, -K
Inlet to injection pump, min.		minus 2 p.s.i.g.	8.5 p.s.i.a.
max.		plus 5.5 p.s.i.g.	plus 8 p.s.i.g.
Outlet to vapor return line, max.		plus 3.5 p.s.i.g.	- - -
Oil pressure limits, 2-4-6- side	- Normal	30-60 p.s.i.g.	- - -
	- Idle (min.)	10 p.s.i.g.	- - -
	- Maximum (cold oil)	100 p.s.i.g.	- - -
Turbocharger oil inlet	- Normal	30-60 p.s.i.g	—
	- Idle (min.)	10 p.s.i.g.	—

- Maximum (cold oil)	100 p.s.i.g.	—

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

Accessory	*Direction of Rotation	Speed Ratio to Crankshaft	Max. Torque Continuous	(in-lb.) Static	Max. Overhang. Moment (in-lb.)
Governor	C	.809:1	29	825	50
Tachometer	C	.5:1	7	50	25
Optional (2) Left and Right	CC	***1.5:1-C 1.14:1-D, -E, -F, -H, -K, -L, -M	***100	800	40
***Optional Belt (-C, -D, -H)	C	.2:1	100	450	—
Generator (gear driven)	C	3:1	150	800	180
Oil cooler	—	—	—	—	40 (wet) 65 (wet) -L, -M ****25 (wet) -N
Starter: CMC P/N 627841, 627842, 634433 and 637847 eligible	CC	32:1	200	400	60

* C Clockwise viewing drive pad; CC - Counterclockwise.

** One drive eligible at 160 in.-lb. continuous torque load provided the other drive does not exceed 100 in.-lb. continuous torque load.

*** Eq. 6051 eligible on Right Accessory Drive provides 1.25:1 ratio.

**** Available only on engines with P/N 637778 starter adapter.

***** The oil cooler overhang moment wet is 55 in.-lb. The maximum overhang moment, including items added by airframe manufacturer, shall not exceed 85 in.-lb.

NOTE 4. The following spark plugs and/or those listed in CMI Service Information Letter SIL03-2 are approved on this engine:

AC	273, 283, 283IR, 275
Auto Lite	SL350
Champion	RHB32E, RHB32N, RHB32P, RHB32W
Red Seal	LJ360

NOTE 5. The aircraft installation shall incorporate the following:

(a) A full-flow 20 micron oil filter incorporating a bypass valve net to open at 12-16 p.s.i. is required. Maximum clean element pressure drop shall not exceed 6 p.s.i. at a flow of 70 lb./min. for the -C or 85 lb./min. for the -D, -E, -F, -H, -K, -L, and -M using SAE 50 oil at 240° F.

(b) 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 c.f.m. and an oil flow of 15 lb./min. at an oil temperature of 240°F shall be installed in the supercharger oil return line of the -C, -D, -E, -H, -L, -M, and -N.

(c) Unless otherwise substantiated by the installer, on an oil separator having a capacity of one pint maximum and capable of separating an air flow of 2 c.f.m. and oil flow of 0.5 lb./hr. at 240° F shall be installed in the engine breather line of the -F and -K.

(d) An exhaust system meeting the requirements of CMI outline drawing 632403 for the -C or 634373 for the -D and -H, or 635203 for the -E, or 636779 or 641418 for the -F and -K, or 641774 for the -L, or 641872 for the -M, or 641774 for the -N.

(e) 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	Maximum Allowable M.P.					
	-C	-D	-E	-H	-L, -N	-M
16,000	34.5	39.5	37.5	39.5	39.0	40.0
18,000	31.2	37.5	35.0	39.5	39.0	37.5
20,000	29.0	35.5	32.0	37.5	39.0	35.0
22,000	26.4	32.5	29.5	35.5	36.5	32.0
24,000	24.3	30.5	27.0	33.5	34.0	29.0
26,000	22.2	28.0	25.0	31.3	31.0	26.0
28,000	20.2	25.5	22.5	28.5	28.0	23.0

30,000	18.5	23.0	20.0	25.5	25.0	20.0

The maximum turbocharger compressor pressure ratio shall be limited to 3.45:1 above 19,000 feet pressure altitude on the -F and -K.

(f) The -D, -E, -H, -L, and -N shall be equipped with a sonic venturi on the pressure side of the turbosupercharger to regulate a bleed airflow of 7 lb. per minute as rated power conditions.

NOTE 6. The GTSIO-520-D is similar to the -C except for increased power rating and addition of induction air intercooler and cabin pressurization system.
The GTSIO-520-E is similar to the -D except for exhaust and induction system configuration.
The GTSIO-520-H is similar to the -D except for increased capacity oil cooler, and improved performance turbocharger.
The GTSIO-520-F is similar to the -D except for increased rating, strengthened structural components, redesigned camshaft and different turbocharger. The -F also includes the exhaust and turbocharger control system, optional hot priming system, sonic venturi and oil cooler. Weights and CG locations given include these components. The GTSIO-520-K is similar to the -F except for piston design, increased cylinder head dome material thickness, and slip joint exhaust system.
The GTSIO-520-L is similar to the -H except for changes in the turbocharger trim, ignition timing, intercooler and propeller flange.
The GTSIO-520-M is similar to the GTSIO-520-L except that the intercooler and sonic venturi have been omitted.
The GTSIO-520-N is similar to the to the GTSIO-520-L except for a new dual stage fuel pump and fuel control unit, fuel primer system and an engine oil heated fuel manifold valve.

NOTE 7. The GTSIO-520-L, -M, and -N utilize the AiResearch turbosupercharger model TH08A70. Compliance with FAR 23.909(c) effective with amendment 23-7 has been shown.

NOTE 8. Teledyne Crittenden Alternator P/N 642056 and Drive Coupling P/N 642362 or latest FAA approved versions are eligible for use with applicable engine models. Alternator compatibility with aircraft must be accomplished by installer.

NOTE 9. Engine model numbers may include a suffix to define minor specification changes and/or accessory packages. Example: GTSIO-520-C(10).

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