TYPE-CERTIFICATE DATA SHEET

No. IM.E.248

for
Continental GTSIO-520 series engines

Type Certificate Holder
Continental Aerospace Technologies, Inc.
2039 South Broad Street
Mobile, Alabama 36615
USA

For Models:

Continental GTSIO-520-C
Continental GTSIO-520-D
Continental GTSIO-520-E
Continental GTSIO-520-F
Continental GTSIO-520-H
Continental GTSIO-520-K
Continental GTSIO-520-L
Continental GTSIO-520-M
Continental GTSIO-520-N
Continental GTSIO-520-S

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I. General

1. Type/ Model

Continental GTSIO-520 / Continental GTSIO-520-C, GTSIO-520-D, GTSIO-520-E, GTSIO-520-F, GTSIO-520-H, GTSIO-520-K, GTSIO-520-L, GTSIO-520-M, GTSIO-520-N, GTSIO-520-S

2. Type Certificate Holder

Continental Aerospace Technologies, Inc.
2039 South Broad Street
Mobile, Alabama 36615, USA

(from 05 July 2013 to 03 September 2020, Continental Motors, Inc.)
(until 05 July 2013, Teledyne Continental Motors)

3. Manufacturer

Continental Aerospace Technologies, Inc.

(from 05 July 2013 to 03 September 2020, Continental Motors, Inc.)
(until 05 July 2013, Teledyne Continental Motors)

4. Date of Application

GTSIO-520-L	GTSIO-520-M	GTSIO-520-N	GTSIO-520-S	all other models
26 Nov. 1979	26 Nov. 1979	26 Nov. 1979	11 Oct. 2022	unknown

Note: Except for GTSIO-520-S, application had been made to individual European National Aviation Authorities (NAA) before 28 September 2003. Application for GTSIO-520-L, GTSIO-520-M, GTSIO-520-N was made to LBA Germany before 28 September 2003.

5. EASA Type Certification Date

GTSIO-520-C	GTSIO-520-D	GTSIO-520-E	GTSIO-520-H	GTSIO-520-F
29 March 1966	20 June 1968	01 April 1968	17 Nov. 1970	15 March 1974

GTSIO-520-K	GTSIO-520-L	GTSIO-520-M	GTSIO-520-N	GTSIO-520-S
31 July 1974	09 Dec. 1981	09 Dec. 1981	09 Dec. 1981	08 Nov. 2022

Note: EASA Type-Certification for the GTSIO-520 engine models, except GTSIO-520-S, is granted, in accordance with Article 2 paragraph 3(a)(i) of EU Commission Regulation EC 1702/2003, based on NAA approvals prior to 28 September 2003 in several EU Member States.
GTSIO-520-L, GTSIO-520-M, GTSIO-520-N had been validated by LBA Germany (TC/TCDS 4595).
EASA TC and TCDS EASA.IM.E.248 replaces all TC and TCDS previously issued in the EASA countries for the above mentioned engine models.

II. Certification Basis

1. State of Design Authority Certification Basis

See FAA TCDS E7CE

2. Reference Date for determining the applicable airworthiness requirements

Same as FAA certification reference date

3. EASA Certification Basis

3.1. Airworthiness Standards

CAR 13 effective June 15, 1956, as amended by 13-1 through 13-44 for all models, and
FAR 33.8, amendment 33-3, effective March 4, 1967 for GTSIO-520-L, GTSIO-520-M, GTSIO-520-N, GTSIO-520-S

3.2. Special Conditions (SC)

none

3.3. Equivalent Safety Findings

none

3.4. Deviations

none

3.5. Environmental Protection

none (not required for piston engines)

III. Technical Characteristics

1. Type Design Definition

For GTSIO-520-C, GTSIO-520-D, GTSIO-520-E, GTSIO-520-F, GTSIO-520-H, GTSIO-520-K, GTSIO-520-L, GTSIO-520-M, GTSIO-520-N: As defined by CONTINENTAL engine stocklist

For GTSIO-520-S: CONTINENTAL GTSIO-520-S Stocklist and Installation Drawing No. 649141

2. Description

The Continental GTSIO-520 engine is a fuel injected, turbocharged, horizontally opposed, six-cylinder four stroke, spark ignited, air-cooled, wet sump engine incorporating a top induction system, bottom exhaust, and provisions for front and rear mounted accessories.

Displacement: 8.521 dm^3 (520 cu. in.)
Bore x stroke: 133.4 mm x 101.6 mm (5.25 in. x 4.00 in.)
Compression ratio: 7.5 : 1
Gear ratio: 0.750:1 (GTSIO-520-C)
0.667:1 (all except GTSIO-520-C)

3. Equipment

Magnetos: One Continental S6LN-201 and one S6LN-205 or one Continental S6LSC-201 and one S6LSC-205 (GTSIO-520-C)
One Continental S6LN-1201 and one S6LN-1205 (all except GTSIO-520-C)
Spark plugs: AC 273, 283, 283IR, 275
Auto Lite SL350
Champion RHB32E, RHB32N, RHB32P, RHB32W
Red Seal LJ360
Tempest URHB32E, URHB32S
See Section 6-4.9 of the latest revision of M-0, Standard Practice Maintenance Manual for other approved spark plugs.
Alternators: Continental Alternator P/N 642056 and Drive Coupling P/N 642362 or latest FAA approved versions are eligible for use with applicable engine models.

4. Dimensions

Dimensions mm, (inches)	GTSIO-520-C	GTSIO-520-D, -E, -F	GTSIO-520-H	GTSIO-520-K	GTSIO-520-L	GTSIO-520-M	GTSIO-520-N	GTSIO-520-S
Overall Length	1081 (42.56)	1586 (62.45)	1617 (63.63)	1429 (56.25)	1546 (60.84)	1585 (62.39)	1546 (60.84)	1328 (52.28)
Overall Height	587 (23.10)	681 (26.78)	677 (26.63)	663 (26.10)	671 (26.41)	671 (26.41)	671 (26.41)	671 (26.41)
Overall Width	865 (34.04)	865 (34.04)	865 (34.04)	865 (34.04)	865 (34.04)	865 (34.04)	865 (34.04)	865 (34.04)

5. Dry Weight

GTSIO-520-C	GTSIO-520-D, -E, -H, -F, -K	GTSIO-520-L	GTSIO-520-M	GTSIO-520-N	GTSIO-520-S
236 kg	250 kg	264 kg	264 kg	269 kg	281 kg
(520 lbs)	(550 lbs)	(583 lbs)	(581 lbs)	(593 lbs)	(619 lbs)

(weight basic engine with turbocharger, without starter and alternator)

6. Ratings

Rating		GTSIO-520-C	GTSIO-520-D	GTSIO-520-E	GTSIO-520-H
Power, kW (HP)	Take-off, 5 min., full throttle at sea level pressure altitude	254 (340) at 3200 rpm and 1.17 bar (34.5 inHg)	280 (375) at 3400 rpm and 1.34 bar (39.5 inHg)	280 (375) at 3400 rpm and 1.27 bar (37.5 inHg)	280 (375) at 3400 rpm and 1.27 bar (37.5 inHg)
	Maximum Continuous, manifold pressure at Critical altitude	254 (340) at 3200 rpm and 1.17 bar (34.5 inHg), at 4877 m (16000 ft)	280 (375) at 3400 rpm and 1.34 bar (39.5 inHg), at 4877 m (16000 ft)	280 (375) at 3400 rpm and 1.27 bar (37.5 inHg) at 4877 m (16000 ft)	280 (375) at 3400 rpm and 1.34 bar (39.5 inHg) at 5486 m (18000 ft)
	Maximum Continuous, manifold pressure at sea level pressure altitude	254 (340) at 3200 rpm and 1.17 bar (34.5 inHg)	280 (375) at 3400 rpm and 1.34 bar (39.5 inHg)	280 (375) at 3400 rpm and 1.27 bar (37.5 inHg)	280 (375) at 3400 rpm and 1.27 bar (37.5 inHg)

Rating		GTSIO-520-F, -K	GTSIO-520-L, -N	GTSIO-520-M	GTSIO-520-S
Power, kW (HP)	Take-off, 5 min., full throttle at sea level pressure altitude	324 (435) at 3400 rpm and 1.51 bar (44.5 inHg)	280 (375) at 3350 rpm and 1.32 bar (39.0 inHg)	280 (375) at 3350 rpm and 1.35 bar (40.0 inHg)	280 (375) at 3350 rpm and 1.29 bar (38 inHg)
	Maximum Continuous, manifold pressure at Critical altitude	254 (340) at 3200 rpm and 1.51 bar (44.5 inHg), at 5791 m (19000 ft)	280 (375) at 3350 rpm and 1.32 bar (39.0 inHg), at 6096 m (20000 ft)	280 (375) at 3350 rpm and 1.35 bar (40.0 inHg) at 4877 m (16000 ft)	280 (375) at 3350 rpm and 1.29 bar (38 inHg), at 6096 m (20000 ft)
	Maximum Continuous, manifold pressure at sea level pressure altitude	254 (340) at 3200 rpm and 1.51 bar (44.5 inHg)	280 (375) at 3350 rpm and 1.32 bar (39.0 inHg)	280 (375) at 3350 rpm and 1.35 bar (40.0 inHg)	280 (375) at 3350 rpm and 1.29 bar (38 inHg)

Note : the performance values specified above correspond to minimum values defined under the conditions of ICAO or ARDC standard atmosphere.

7. Control System

The engine is equipped with a mechanical CONTINENTAL fuel injection system.

8. Fluids (Fuel, Oil, Coolant, Additives)

Fuel: Aviation Gasoline, minimum grade 100LL, 100 or B95/130 CIS or RH95/130

Oil: SAE J1899 or SAE J1966, see CONTINENTAL Spec MHS No. 24

9. Aircraft Accessory Drives or Mounting Provisions

Designation	Rotation direction	Speed ratio to crankshaft	Max. Torque Nm (in. lbs) Continuous	Static	Max. Overhang moment Nm (in. lbs)
Propeller governor	CW	0,809:1	3.28 (29)	93.21 (825)	5.65 (50)
Tachometer	CW	0.5:1	0.79 (7)	5.65 (50)	2.82 (25)
Generator, gear driven	CW	3:1	16.95 (150)	90.39 (800)	20.33 (180)
Oil cooler, wet (all except GTSIO-520-L, -M, -N, -S)	-	-	-		4.52 (40)
Oil cooler, wet (GTSIO-520-L, -M, -S)	-	-	-		7.34 (65)
Oil cooler, wet (GTSIO-520-N)	-	-	-		9.60 (85)[1)]
Optional Accessory Drive (2) Left[2)] and Right	CCW	1.5:1 (GTSIO-520-C)[3)] 1.14 :1 (GTSIO-520-D, -E, -F, -H, -K, -L, -M, -S)	11.30 (100)[3)]	90.39 (800)	4.52 (40)
Optional Belt Drive (GTSIO-520-C, -D, -H)[4)]	CW	0.2:1	11.30 (100)	50.84 (450)	-
Starter[5)]	CCW	32:1	22.60 (200)	45.19 (400)	6.78 (60)

Notes : - CW - clockwise; CCW – counter clockwise (viewing drive pad)

[1)] The oil cooler overhang moment wet is 6.21 Nm (55 in. lbs). The maximum overhang moment, including items added by airframe manufacturer, shall not exceed 9.60 Nm (85 in.lbs).

[2)] One drive is eligible at 18.08 Nm (160 in. lbs) continuous torque load provided the other does not exceed 11.30 Nm (100 in. lbs) continuous torque load.

[3)] EQ Kit 6051 eligible on Right Accessory Drive provides 1.25:1 ratio.

[4)] Available only on engines with P/N 637778 starter adapter drive sheave.

[5)] Continental P/N 627841, 627842, 634433, 637847, 646275-1, 658741 eligible

IV. Operating Limitations

1. Temperature Limits

Cylinder head bayonet thermocouple: 238 °C (460 °F)
Cylinder barrel (measured per Continental drawing 630361): 154 °C (310 °F)
Oil inlet: 116 °C (240 °F)

2. Speed Limits

Max. overspeed (10 seconds, Momentary overspeed): 3500 rpm
See latest revision of CONTINENTAL Standard Practice Maintenance Manual M-0, Chapter 6, for detailed information

3. Pressure Limits

3.1 Fuel Pressure

Inlet to injection pump, minimum: - 13.8 kPa (-2 psig) for GTSIO-520-C, -D, -E, -H, -L, -M, -N, -S
58.6 kPa abs. (8.5 psia) for GTSIO-520-F, -K
maximum: + 37.9 kPa (+5.5 psig) for GTSIO-520-C, -D, -E, -H, -L, -M, -N, -S
+ 55.2 kPa (+8 psig) for GTSIO-520-F, -K
Outlet to vapour return line, max.: + 24.1 kPa (+3.5 psig)

3.2 Oil Pressure

Idle (2-4-6- side): 69 kPa (10 psig)
Normal (2-4-6- side): 207…414 kPa (30...60 psig)
Maximum (cold oil, 2-4-6- side): 690 kPa (100 psig)
Turbocharger oil inlet, idle: 69 kPa (10 psig)
Turbocharger oil inlet, normal: 207…414 kPa (30...60 psig)
Turbocharger oil inlet, max. (cold oil): 690 kPa (100 psig)

V. Operating and Service Instructions

Manuals

	GTSIO-520-C	GTSIO-520-D	GTSIO-520-F
Operator's Manual	X30047	X30079	X30128
Installation Drawing	632380	633756	640601

	GTSIO-520-H	GTSIO-520-K	GTSIO-520-L
Operator's Manual	X30129	X30598	X30532
Installation Drawing	637727	641469	641396

	GTSIO-520-M	GTSIO-520-N	
Operator's Manual	X30533	X30551	
Installation Drawing	641898	643725	

	GTSIO-520-S		
Installation and Operation Manual	OI-34		

Instructions for Continued Airworthiness

	All models except -S	**GTSIO-520-S**	
Maintenance Manual	M-0	M-0	
Overhaul Manual	X30045		
Maintenance and Overhaul Manual		M-34	
Service Bulletins and Service Letters	As issued	As issued	

VI. Notes

Note 1: The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable "Maintenance Manual" document, chapter 4 "Airworthiness Limitations".

Note 2: Engine model numbers may include a suffix to define minor specification changes. Example: GTSIO-520-C(10)

Note 3: 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 4: Continental 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 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 psi (83-110 kPa) is required. Maximum clean element pressure drop shall not exceed 6 psi (41 kPa) at a flow of 70 lb./min.(31.7 kg/min) for the -C or 85 lb./min. (38.6 kg/min) for the -D, -E, -F, -H, -K, -L, -M, and -S using SAE 50 oil at 240° F (116° C).

(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. (56.6 l/min) and an oil flow of 15 lb./min. (6.8 kg/min) at an oil temperature of 240° F (116° C) shall be installed in the supercharger oil return line of the -C, -D, -E, -H, -L, -M, -N, and -S.

(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. (56.6 l/min) and oil flow of 0.5 lb./hr. (0.23 kg/h) at 240° F (116° C) shall be installed in the engine breather line of the -F and -K.

(d) An exhaust system meeting the requirements of Continental 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, or 667395 for the -S.

(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 Ft (m)	Maximum Allowable Manifold Pressure inHg (bar)						
	-C	-D	-E	-H	-L, -N	-M	-S
16000 (4877)	34.5 (1.17)	39.5 (1.34)	37.5 (1.27)	39.5 (1.34)	39.0 (1.32)	40.0 (1.35)	38.0 (1.29)
18000 (5486)	31.2 (1.06)	37.5 (1.27)	35.0 (1.18)	39.5 (1.34)	39.0 (1.32)	37.5 (1.27)	38.0 (1.29)
20000 (6096)	29.0 (0.98)	35.5 (1.20)	32.0 (1.08)	37.5 (1.27)	39.0 (1.32)	35.0 (1.18)	38.0 (1.29)
22000 (6706)	26.4 (0.89)	32.5 (1.10)	29.5 (1.00)	35.5 (1.20)	36.5 (1.24)	32.0 (1.08)	36.5 (1.24)
24000 (7315)	24.3 (0.82)	30.5 (1.03)	27.0 (0.91)	33.5 (1.13)	34.0 (1.15)	29.0 (0.98)	34.0 (1.15)
26000 (7925)	22.2 (0.75)	28.0 (0.95)	25.0 (0.85)	31.3 (1.06)	31.0 (1.05)	26.0 (0.88)	31.0 (1.05)
28000 (8534)	20.2 (0.68)	25.5 (0.86)	22.5 (0.76)	28.5 (0.96)	28.0 (0.95)	23.0 (0.78)	28.0 (0.95)
30000 (9144)	18.5 (0.63)	23.0 (0.78)	20.0 (0.68)	25.5 (0.86)	25.0 (0.85)	20.0 (0.68)	25.0 (0.85)

The maximum turbocharger compressor pressure ratio shall be limited to 3.45:1 above 19,000 feet (5791 m) 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. (3.2 kg) per minute as rated power conditions.

SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

n/a

II. Type Certificate Holder Record

Continental Aerospace Technologies, Inc.
(from 05 July 2013 to 03 September 2020, Continental Motors, Inc.)
(until 05 July 2013, Teledyne Continental Motors)

III. Change Record

Issue	Date	Changes	TC issue
Issue 01	08 November 2022	Initial Issue	08 November 2022

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