DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

3E1
Revision 27
CONTINENTAL
IO-470-D, -E, -F, -G,
-H, -J, -K, -L, -LO,
-M, -N, -P, -R, -S, -T, -U,
-V, -VO,
L/IO-470-A

November 2, 2011

TYPE CERTIFICATE DATA SHEET NO. 3E1

Engines of models described herein conforming with this data sheet (which is part of type certificate No. 3E1) 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
Mobile, Alabama 36601

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

Model	IO-470-D, -E, -F, -L, -LO, -M, -S, -U, -V, -VO	IO-470-G, -R	IO-470-H, -N
Type	6HOA	- - -	- - -
Rating, ICAO or ARDC std. atm.			
Max. continuous hp., r.p.m., F.T. at S.L. pressure altitude	260-2625	250-2600	260-2625
Takeoff, 5 min., hp., r.p.m., F.T. at S.L. pressure altitude	260-2625	250-2600	260-2625
Fuel (min. grade aviation gas.)	100, 100LL or B95/130 CIS	91/96	100, 100LL or B95/130 CIS
Lubricating oil (see NOTE 6)			
Ambient air temperature			
Above 40° F.	Grade SAE 50	- - -	- - -
Below 40° F.	Grade SAE 30	- - -	- - -
Bore and stroke, in.	5.00 x 4.00	- - -	- - -
Displacement, cu. in.	471	- - -	- - -
Compression ratio	8.6:1	8.0:1	8.6:1
Weight (dry), lb.	426 (-D, -F, -U, -V, -VO) 429 (-E, -L, -LO, -S) 428 (-M)	431	432
C.G. location (basic engine)			
Fwd. of rear face acc. case, in.	11.29	- - -	12
Below crankshaft centerline, in.	.54	- - -	1.2
Beside crankshaft centerline toward 1-3-5 side, in.	.24	- - -	0.5
Propeller shaft	Special integral flange 4-7/8 in. O.D. with six ½ in. bolt holes in 4 in. diam. circle	- - -	- - -

Model	IO-470-D, -E, -F, -L, -LO, -M, -S, -U, -V, -VO	IO-470-G, -R	IO-470-H, -N
Carburetion or fuel injection	CMI Injection System (Eq. 5648, 5808 or 5832 for -D, -E Eq. 5688 for -F Eq. 5850 for -L, -M Eq. 5903 for -LO Eq. 5886 for -S Eq. 5919 for -H Eq. 6076 for -V, -VO) or latest FAA approved version	(Eq. 5648, 5808 or 5832) or latest FAA approved version	(Eq. 5620-2 for -H Eq. 5831 for -N) or latest FAA approved version
Ignition, dual magnetos	See NOTE 12	- - -	- - -
Timing, °BTC	20	26	20
Spark plugs	See NOTE 8	- - -	- --
Oil sump capacity, qt.	12; 8 usable at 15° noseup and 5° nosedown attitudes	- - -	12; 10 usable at 18° noseup and 14° nosedown attitudes
NOTES	1 thru 12	1 thru 8 and 12	1 thru 10 and 12

Model	IO-470-J, -K	IO-470-P, -T, L/IO-470-A
Type	6HOA	- - -
Rating, ICAO or ARDC std. atm.		
Max. continuous hp., r.p.m., F.T. at S.L. pressure altitude	225-2600	250-2600
Takeoff, 5 min., hp., r.p.m., F.T. at S.L. pressure altitude	225-2600	250-2600
Fuel (min. grade aviation gas.)	80/87	91/96
Lubricating oil (see NOTE 6)		
Ambient air temperature		
Above 40° F.	Grade SAE 50	- - -
Below 40° F.	Grade SAE 30	- - -
Bore and stroke, in.	5.00 x 4.00	- - -
Displacement, cu. in.	471	- - -
Compression ratio	7.0:1	8.0:1
Weight (dry), lb.	400	472 (-P), 475 (-T, LIO-470-A)
C.G. location (basic engine)		
Fwd. of rear face acc. case, in.	12	14.21
Below crankshaft centerline, in.	1.2	0.95
Beside crankshaft centerline toward 1-3-5 side, in.	0.5	0.10
Propeller shaft	Special integral flange 4-7/8 in. O.D. with six ½ bolt holes in 4 in. diam. circle	SAE No. 20 spline extended shaft with provision for hydraulic propeller control and reversing
Carburetion or fuel injection	CMI Injection system (Eq. 5612-1 for -J Eq. 5807 for -K) or latest FAA approved version	CMI Injection system (Eq. 5648 for -P, -T Eq. 6022 for LIO-470-A) or latest FAA approved version
Ignition, dual magnetos	See NOTE 12	See NOTE 12 for-P, -T Two Scintilla S6LN-25 for LIO-470-A
Timing, °BTC	22	26
Spark plugs	See NOTE 8	- - -
Oil sump capacity, qt.	12; 10 usable at 18° noseup and 14° nosedown attitudes	12; 8 usable at 15° noseup and 5° nosedown attitudes, -P; 12; 10 usable at 21° noseup and nosedown attitudes, -T, LIO-470-A
NOTES	1 thru 8 and 12	1 thru 8 and 12

" - - -" Indicates "same as preceding model"
"===" Indicates "does not apply"

Production Basis: Production Certificate 508

Certification basis: Part 13 of the Civil Air Regulations effective June 15, 1956 as amended by 13-1.
Application for Type Certificate dated February 25, 1958.
Type Certificate No. 3E1 issued October 14, 1958 for Model IO-470-D; IO-470-E added November 26, 1958; IO-470-F added December 3, 1958; IO-470-G added March 30, 1959; IO-470-J added July 31, 1959; IO-470-H added August 7, 1959; IO-470-L added March 9, 1960; IO-470-M added March 10, 1960; IO-470-K and IO-470-N added June 9, 1960; IO-470-R added October 7, 1960; IO-470-P added March 31, 1961; IO-470-S added May 10, 1961; IO-470-T added July 1, 1963; IO-470-U added August 28, 1963; LIO-470-A added March 18, 1964; IO-470-V added June 15, 1965; IO-470-LO and IO-470-VO added September 26, 1967.

NOTE 1. Maximum permissible temperatures:

Cylinder head bayonet thermocouple	450° F. (IO-470-J, -K)
	460° F. (IO-470-D, -E, -F, -G, -H, -L, -LO -N, -P, -R, -S, -T, -U, -V, -VO, LIO-470-A)
Cylinder barrel	290° F. (All models)
Oil inlet	225° F. (IO-470-D, -E, -F, -G, -H, -J, -K, -L, -M, -N, -P, -R, -S, -T, -U, -V, LIO-470-A)
	240° F. (IO-470-LO and -VO)

NOTE 2. Fuel pressure limits:

Inlet to injection pump, min. - minus 2 p.s.i.g.
max. - plus 10 p.s.i.g.
Outlet to vapor return line - 3.5 p.s.i.g. max.
Oil pressure limits, 2-4-6 side: Normal operation , 30-60 p.s.i.g.
Idle 10 p.s.i.g. min.
Maximum (cold oil) 100 p.s.i.g.

NOTE 3.

	MODELS		Speed Ratio	Max. Torque(in.-lb.)		Maximum
Accessory	IO-470-D,-E,-F, -H,-M,-N,-P,-R,-T	IO-470-J, -K-N	to Crankshaft	Continuous	Static	Overhang (in.-lb.)
Governor	C	C	1.0:1	29	825	50
Tachometer	CC	C	0.5:1	10	50	25
Optional (2)						
Left and Right Side**	C	C	1.5:1	100*	800	40
Generator	CC	CC	2.28:1	100	800	100
Oil Cooler						65
Starter (See below table)	CC	CC				

	MODELS		Speed Ratio	Max. Torque(in.-lb.)		Maximum
Accessory	IO-470-L, -M, -N, -T, -U, -V	LIO-470 -A	to Crankshaft	Continuous	Static	Overhang (in.-lb.)
Governor	C	CC	1.0:1	29	825	50
Tachometer	Opt.	CC	0.5:1	10	50	25
Optional (2)						
Left and Right Side**	C	CC	1.5:1	100*	800	40
Generator	CC	C	2.28:1	100	800	100
Oil Cooler						65
Starter	CC	C	32.1	200	400	60

CMI P/N 537241 eligible for -D, -L, -LO, -M, -U, -V, -VO
CMI P/N 535856 eligible for -E, -G, -H, -R
CMI P/N 626960 eligible for -F
CMI P/N 627842 eligible for -J, -K, -N
CMI P/N 627841 eligible for -P, -T, LIO-470-A
CMI P/N 629176 eligible for -S
Direction of Rotation shown in applicable column.
C - Clockwise; CC - Counter Clockwise; Opt. - Optional; viewing drive pad.

*One drive eligible at 160 in.-lb. continuous torque load provided the other drive does not exceed 100 in.-lb. continuous torque load.
**IO-470-L, -LO provide right side only.

NOTE 4.
IO-470-E engine same as IO-470-D except that throttle body is 0.75 inch closer to rear of engine.
IO-470-F engine same as IO-470-D except for updraft throttle body and revised balance tube.
IO-470-G engine same as IO-470-E except that pistons of 8.0:1 compression ratio and short spark plugs are used.
IO-470-H engine similar to IO-470-C (Data Sh. E-273) except that IO-470-D cylinders, pistons and main bearings are used.
IO-470-J engine similar to IO-470-C (Data Sh. E-273) except straight valve cylinders and 7.0:1 CR pistons are used.
IO-470-K engine identical to IO-470-J except for charge in oil sump design and related changes in induction system.
IO-470-L engine same as IO-470-E except crankshaft is one inch longer and balance tube is relocated and revised.
IO-470-M engine same as IO-470-D except air throttle is slanted aft and balance tube is relocated and revised.
IO-470-N identical to IO-470-H except for change in oil sump design and related changes in induction system.
IO-470-P same as IO-470-G except it incorporates an extension propeller shaft with an SAE No. 20 spline. Propeller shaft has provisions for hydraulic propeller control and reversing. Engine is approved for pusher installation and reversible propeller.
IO-470-R identical to IO-470-G except the crankshaft is one inch longer, locating the propeller flange 1" forward.
IO-470-S same as IO-470-E except for increased height of throttle body and throttle valve axis is parallel to engine centerline.
IO-470-T same as IO-470-P except for oil sump capacity and tachometer drive provisions.
LIO-470-A identical to IO-470-T except crankshaft turns in opposite direction.
IO-470-U identical to IO-470-D except for crankshaft damper configuration and a minor change in cam timing and balance tube diameter.
IO-470-V identical to IO-470-U except for fuel injector equipment which incorporates a four p.s.i.g. manifold valve and a different design fuel injection pump.
Models ending in "O" are identical to corresponding model except they have oil spray piston cooling, nimonic exhaust valves and a modified fuel injection system giving increased fuel flow at take off and maximum continuous power.

NOTE 5.
Models IO-470-D, -E, -F, -G, -H, -M, -N, -R, and -S incorporate crankshaft with four sixth order dampers.
Models IO-470-J and -K incorporate a crankshaft with one fifth and one sixth order damper.
Models IO-470-L and -LO incorporate crankshaft with two fifth and two sixth order dampers.
Models IO-470-P, -T and LIO-470-A incorporate crankshaft with two sixth and one-half order dampers.
Models IO-470-U, -V, and -VO incorporate crankshaft with two sixth, and one fifth one fourth and a half order dampers.

NOTE 6.
Straight mineral or ashless disperant oil meeting TCM Spec. MHS-24 is approved for use in Models IO- 470-D, -E, -F, -G, -H, -J, -K, -L, -M, -N, -O, -P, -R, -S, -T, -U, -V and L/IO-470-A. Ashless disperant oil meeting TCM Spec. MHS-24 is approved for use in IO-470-LO and -VO engines. Lubricating oils qualified under SAE-J1899 or J1966 are considered qualified under CMI Spec MHS-24 CMI instructions should be consulted and followed when changing types of oil.

NOTE 7.
A full-flow oil filter may be used with these engines if installation incorporates filter bypass valve which opens between 12 and 16 p.s.i. The oil filter housing is eligible for direct mounting of oil filter equipment having maximum weight of six pounds and overhang moment of 25 in.-lb.

NOTE 8. The following spark plugs and/or those listed in CMI Service Information Letter SIL03-2 are approved on this engine:

Engine Models	Spark Plugs	
IO-470-D, -E, -F, -H, -L, -LO, -M, -N, -S. -U, -V, -VO	AC	SR86L, HSR86L, HSR87LIR, HSR87LP, 171, 181, 271, 273, 281 281IR, 283, 283IR
	Auto Lite	SL30A, SL300A
	Champion	RHA32N, RHB32N, RHB32E, RHB33E, RHB36P, RHB37E, REA37N, REB37N, RHA37N, RHB37N, RHB38E, R115
	Red Seal	LE310, LJ310
IO-470-G, -P, -R, -T, LIO-470-A	AC	SR83IR, HSR83IR, SR83P, HSR83P, SR86, HSR86, SR87, HSR87
	Auto Lite	SH26, SH260
	Champion	R25S, RED37N, REM37N, REM38E, REM38P, RHM38E, RHM38P, REM39N, REM40E, RHM40E
	Red Seal	SE270, SJ270
IO-470-J, -K	AC	SR83IR, HSR83IR, SR83P, HSR83P, A88, S88, HS88, S88D, SR88, SR88D, HSR88
	Auto Lite	SH15, SH15R, SH20A, SH200A
	Champion	RC26S, REM38P, RHM38P, RED39N, REM398N, RHD39N, RHM39N, REM40E, RHM40E, ED41N, EM41N, EM42E
	BG	RB485S, 706S, 919SR, 919SR5, RB955S
	Red Seal	SE190, SE230, SJ230

NOTE 9. Engine models IO-470-D, -E, -F, -H, -L, -M, -N and -S, with S/N prefixed by "CS" have a heavier crankshaft and connecting rod assembly installed and are two pounds heavier than the weights listed. The S/N of any engine modified to this configuration in accordance with manufacturer's approved service instructions must have the prefix "CS" stamped in front of the engine S/N on the nameplate.

NOTE 10. The following engines are timed 20° BTC by the factory:

IO-470-D, 104023 thru 025, 027, 028, 032 and up
IO-470-E, 78895 and up
IO-470-F, 76618 thru 620, 623 and up
IO-470-H 87139 and up
IO-470-L, 90687, 90709 and up
IO-470-M, 93154 and up
IO-470-N, 95491, 493, 494, 496 and up
IO-470-S, 1022266, 268 thru 272, 275 and up

S/N not listed were timed 24° BTC by the factory. These may be retimed to 20° BTC in accordance with manufacturer's FAA approved service instructions.

NOTE 11. Continental cold weather starting equipment No. 6040 is eligible on the IO-470-L and -LO.

NOTE 12. The following magnetos equipped with an appropriate harness are eligible on these engines at the indicated weight change:

	Weight Change
One each CMI/TCM/Bendix S6RN-201 and S6RN-205	None
One each CMI/TCM/Bendix S6RN-1201 and S6RN-1205	+1 lb.
Two CMI/TCM/Bendix S6RN-25	+1 lb.
Two CMI//TCM/Bendix Scintilla S6RN-1225	+1 lb.
Two CMI/TCM S6RSC-25	None
One each CMI/TCM S6RSC-201(L) & S6RSC-205(R)	None
Two Slick Electro Model 662 or 680	+2 lb.
Two Slick 6310	-1.9 lb
Two Slick 6380	-1.9 lb

NOTE 13. Engine model numbers may include a suffix to define minor specification changes and/or accessory packages. Example: IO-470-C(10).

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