



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº EM-8209

Type Certificate Holder:

TEXTRON LYCOMING – AVCO CORPORATION

625, Oliver Street
Williamsport, Pennsylvania, PA 17701
USA

EM-8209-06
Sheet 01
LYCOMING
IO-540-C4B5, -C4D5D, -K1A5, -K1F5D, -K1G5D, - K1J5D, -V4A5, -W1A5, -W1A5D, -AB1A5, -AC1A5 - K1G5, -K1J5
September 2008

Engines of models described herein conforming with this data sheet, which is part of Type Certificate No. 8209, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Brazilian Aeronautical Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other instructions.

I - MODELS IO-540-C4B5, -C4D5D, -K1A5, -K1F5D, -K1G5D, -K1J5D, -V4A5, -W1A5, -W1A5D, -AB1A5, -AC1A5, -K1G5, -K1J5

TYPE 6HOA DIRECT DRIVE

RATINGS	-C4B5, -C4D5D	-AB1A5	-W1A5, -W1A5D	-K1F5D, -K1J5 -K1G5D, -K1J5D	-K1A5 -K1G5
	Max. continuous, full throttle at: Sea level pressure altitude, hp (rpm):	250 (2 575)	230 (2 400)	235 (2 400)	300 (2 700)
Takeoff, full throttle at: Sea level pressure altitude, hp (rpm):	250 (2 575)	230 (2 400)	235 (2 400)	300 (2 700)	300 (2 700)

afp

		-C4B5, -C4D5D	-AB1A5	-W1A5, -W1A5D	-K1F5D, -K1J5 -K1G5D,-K1J5D	-K1A5 -K1G5
FUEL TYPE	Minimum grade aviation gasoline:	100/100LL ⁽¹⁾	--	--	--	--
	Pump Drive:	See Note 3	--	--	--	--
	(1) See latest revision of Lycoming Service Instruction No. 1070 for alternate fuel grades.					
CARBURETION / INJECTION	Fuel injection ⁽²⁾	PAC RSA-5AD1	--	--	PAC RSA-10ED1 (IO- 540-K1F5D PAC RS-10ED1)	--
	(2) Precision Airmotive Corp. (PAC) formally Bendix.					
OIL, LUBRICATION	Lubricants should conform to the specifications as listed or to subsequent revisions thereto:	Lycoming Specification No. 301-E and Service Instruction No. 1014.				
	Oil sump capacity, qt.:	12.0	8.0	--	12.0	--
	Usable oil qt. Normal operation:	9.25	6.0	--	9.25	--
	20° nose up or down:	9.25	6.0	--	9.25	--
	30° nose up or down:	8.00	6.0	--	8.00	--
TEMPERATURE LIMITS		See Note 1	--	--	--	--
PRESSURE LIMITS		See Note 2	--	--	--	--
WEIGHT	Weight:	See Note 5	--	--	--	--
CG LOCATION		See Note 9	--	--	--	--

		-C4B5, -C4D5D	-AB1A5	-W1A5, -W1A5D	-K1F5D, -K1J5 -K1G5D,-K1J5D	-K1A5 -K1G5
IGNITION	Magnetos (3) :	See Note 9	--	--	--	--
	Timing, oBTC :	25	23	--	20	--
	Spark Plugs :	See Note 4	--	--	--	--
	(3) For alternate magnetos see latest Textron Lycoming Service Instruction S.I. 1443					
COMPRESSION	Bore and stroke, in:	5.1250 x	--	--	--	--
	Displacement, cu. in:	4.3750	--	--	--	--
	Compression ratio:	541.5	--	--	8.7:1	--
		8.5:1				
PROPELLER SHAFT- SPECIFICATIONS	A. S. 127	Type 2 Flange modified	--	--	--	--
	Crankshaft Dampers (torsional):	See Note 7	--	--	--	--
II - MODELS		-V4A5	-AC1A5			
RATINGS						
	Max. continuous, full throttle at:					
	Sea level pressure altitude, hp (rpm)	260 (2 700)	300 (2 700)			
	Takeoff, full throttle at:					
	Sea level pressure altitude, hp (rpm)	260 (2 700)	300 (2 700)			

		-V4A5	-AC1A5
FUEL TYPE	Minimum grade aviation gasoline:	100/100LL ⁽¹⁾	--
	Pump Drive :	See Note 3	--
	(1) See latest revision of Lycoming Service Instruction No. 1070 for alternate fuel grades.		
CARBURETION / INJECTION	Fuel injection ⁽²⁾ :	PAC	PAC
	(2) Precision Airmotive Corp. (PAC) formally Bendix.	RSA-5AD1	RSA-10ED1
OIL, LUBRICATION	Lubricants should conform to the specifications as listed or to subsequent revisions thereto:	Lycoming Specification No. 301-E and Service Instruction No. 1014.	
	Oil sump capacity, qt.:	8.0	11
	Usable oil qt. Normal operation:	6.0	5.5
	20° nose up or down:	6.0	5.5
	30° nose up or down	6.0	5.5
TEMPERATURE LIMITS		See Note 1	--
PRESSURE LIMITS		See Note 2	--
WEIGHT	Weight:	See Note 5	--
CG LOCATION		See Note 9	--

		-V4A5	-AC1A5
IGNITION	Magnetos (3) :	See Note 9	--
	Timing, oBTC :	25	20
	Spark Plugs :	See Note 4	--
	(3) For alternate magnetos see latest Textron Lycoming Service Instruction S.I. -1443.		
COMPRESSION	Bore and stroke, in:	5.1250 x 4.3750	--
	Displacement, cu. in:	541.5	--
	Compression ratio:	8.5:1	8.7:1
PROPELLER SHAFT-SPECIFICATIONS	A. S. 127	Type 2 Flange modified	--
	Crankshaft Dampers (torsional):	See Note 7	--
IMPORT REQUIREMENTS	Each engine imported separately and/or spare parts must be accompanied by an export airworthiness approval issued by FAA, attesting that the particular engine and/or parts were submitted to the governmental quality control before delivery and are in conformity with the ANAC approved type design.		
PRODUCTION BASIS	Production Certificate No. 3 (FAA)		

CERTIFICATION BASIS	CAR 13 effective 15 June 1956, as amended by 13-1, 13-2, 13-3.	<u>Model</u>	<u>Application</u>	<u>Issued TC</u>
		-K1A5, -K1F5D,	05 Dec. 1980	13 May 1982
		-K1G5D, -K1J5D, -K1J5	05 Dec. 1980	13 May 1982
		-C4B5	21 Mar. 1986	15 May 1987
		-C4D5D	25 Sep. 1990	28 Nov. 1991
		-W1A5, -W1A5D	27 Jul. 1998	18 Aug. 1998
		-V4A5	27 Jul. 1998	18 Aug. 1998
		-AB1A5	10 Feb. 1997	06 Oct. 1998
		-AC1A5	02 Oct. 1998	20 April 1999
		-K1G5	28 May 1999	05 Oct. 1999

NOTES:

NOTE 1 Max. permissible temperatures, °C / °F:

Cylinder head (well type thermocouple)	260 / 500
Cylinder Base ⁽¹⁾	163 / 325
Oil Inlet	118 / 245

(1)Cylinder base temperature limits are not applicable to engine models which incorporate internal piston cooling oil jet

NOTE 2 Pressure Limits – kPa / psi

Fuel

at inlet to fuel pump -	Maximum	Minimum		
-C4B5, -C4D5D, -AB1A5, -W1A5, -W1A5D, -V4A5:	241.31 / 35	-13.78 / -2		
-K1F5D, -K1G5D, -K1J5D, K1A5, -K1G5, -K1J5:	275.79 / 40	-13.78 / -2		
-AC1A5:	448.15 / 65	-13.78 / -2		
at inlet to fuel injector-	Maximum	Minimum	Minimum idle	Max. injector in idle cutoff
-C4B5, -C4D5D, -AB1A5, -W1A5, W1A5D, -V4A5:	310.26 / 45	96.52 / 14	82.73 / 12	379.21 / 55
-K1F5D, -K1G5D, -K1J5D, K1A5, -K1G5:	275.79 / 40	124.10 / 18	82.73 / 12	379.21 / 55
-AC1A5:	448.15 / 65	199.94 / 29	82.73 / 12	448.15 / 65

NOTE 2 (cont.)	Oil	Maximum	Minimum
	Normal operation	655.0 / 95	379.21 / 55
	Idling	#	172.36 / 25
	Starting, warm-up, taxi and take-off	792.89 / 115	#

NOTE 3 Accessory Drive Provisions: For additional information on engine drives, refer to Textron Lycoming Operator's Manual:

IO-540 - All Models

Accessory	Rotation Facing Drive Pad	Speed Ratio to Crankshaft	Maximum		Max. Overhang Moment (in.lb)
			Torque Continuous	(in.lb) Static	
Starter	CC	16.5560:1	#	450	150
Generator	C	1.91:1	60	120	175
Generator	C	2.50:1	60	120	175
Alternator	C	3.20:1	60	120	175
Alternator	C	3.63:1	60	110	175
Vacuum pump	CC	1.30:1	70	450	25
Hydraulic pump	C	1.3850:1	100	800	40
Hydraulic pump	C	0.48:1	100	800	40
Hydraulic pump	C	1.30:1	100	800	40
Hydraulic pump	C	1.30:1	180	2 200	150
Tachometer	C	0.50:1	7	50	5
Prop governor	C	0.8950:1	125	1 200	25
Prop governor	C	0.9470:1	125	2 200	25
Fuel pump	Plunger	0.50:1	#	#	10
Fuel pump	CC	1.00:1	25	450	25
Fuel pump	C	1.00:1	25	450	25

"#" indicates: Does not apply.

"C" Clockwise, "CC" Counter-Clockwise

"Narrow deck" engines have a propeller governor drive ratio of 0.895:1 and "wide deck" engines have a 0.947:1 ratio.

NOTE 4 Spark Plugs: See latest revision of Lycoming Service Instruction no. 1042 for approved equipment.

gta

NOTE 5 Model similarities and differences:

Model	Weight (dry), kg / lb	Characteristics
IO-540-AB1A5	173 / 382	Similar to IO-540-W1A5 except has more effective counterweights , two Slick impulse magetos and the fuel injector is located on the bottom of the sump.
IO-540-C4B5	183 / 404	Similar to -C1B5 except incorporates heavier crankshaft counterweights, eligible for use with Hartzell compact propeller.
IO-540-C4D5D	186 / 410	Similar to -C4B5 except has a TCM D6LN-2031 impulse coupling dual magneto.
IO-540-K1A5	201 / 443	Similar to -G1A5 except has TCM S6LN-1209 and 1227 magnetos, a PAC RSA-10ED1 fuel injector mounted 38 1/2° left of rear and a stiffer crankshaft.
IO-540-K1F5D	198 / 438	Same as -K1F5 but with TCM D-2000 series, retard breaker dual magneto.
IO-540-K1G5D	198 / 438	Same as -K1A5D except equipped with a diaphragm type fuel pump and drive.
IO-540-K1J5	199 / 441	Same as -K1F5 except equipped with a diaphragm type fuel pump and drive.
IO-540-K1J5D	198 / 437	Same as -K1F5D except equipped with a diaphragm type fuel pump and drive.
IO-540-V4A5	190 / 420	Similar to -V4A5D except is equipped with two Slick magnetos in place of the TCM dual magneto.
IO-540-W1A5D	181 / 400	Similar to O-540-J1A5D (TC-E295) except equipped with oil, sump, intake pipes, and fuel injection system from the V4A5D.
IO-540-W1A5	181 / 400	Similar to -W1A5D except is equipped with two Slick magnetos in place of the TCM dual magneto
IO-540-AC1A5	206 / 454	Similar to IO-540-K1C5 except top intake down exhaust.
IO-540-K1G5	200 / 442	Same as -K1A5 except equipped with a diaphragm type fuel pump and drive.

NOTE 6 Accessories and Equipment:

Starter, generators and alternators approved for use on these engines are listed in the latest revisions of Textron Lycoming Service Instruction No. 1154.

NOTE 7 These engines incorporate crankshafts with one fifth order and one sixth order dampers unless the number "5" is omitted in the fourth position of the model designation, i.e. -C2C which has two sixth order dampers. These engines also have variations in crankshafts and counterweights; therefore, for approved engine and propeller combinations refer to the specific propeller and aircraft TC data sheets.

NOTE 8 Not Applicable.

NOTE 9 For all models - ignition and center of gravity:

Models	Ignition, ^(4,5)	C.G. location (dry with starter and generator installed)		
		From front face of propeller mounting flange (cm / in)	Off prop. shaft C.L. (cm / in)	
			Vertical	Lateral
-C4B5	Slick 675, 674	46.12 / 18.16	2.92 / 1.15 below	0.53 / 0.21 left
-C4D5D	TCM D6LN-2031	46.12 / 18.16	0.38 / 0.15 below	0.53 / 0.21 left
-K1A5	TCM S6LN-1227, S6LN-1227 or S6LN-1209	46.35 / 18.25	2.92 / 1.15 below	0.53 / 0.21 left
-K1F5D	TCM D6LN-2230	46.35 / 18.25	2.23 / 0.88 below	0.40 / 0.16 right
-K1G5D	TCM D6LN-2031	46.35 / 18.25	2.23 / 0.88 below	0.40 / 0.16 right
-K1J5D	TCM D6LN-2230	46.35 / 18.25	2.23 / 0.88 below	0.40 / 0.16 right
-K1J5	TCM S6LN-1228 or S6LN-1209	46.35 / 18.25	2.23 / 0.88 below	0.40 / 0.16 right
-V4A5	Slick 6351, 6350	43.81 / 17.25	1.27 / 0.50 below	0.63 / 0.25 left
-W1A5D	TCM D6LN-3000	44.70 / 17.60	1.95 / 0.77 below	0.50 / 0.20 left
-W1A5	Slick 6361, 6350	44.70 / 17.60	1.95 / 0.77 below	0.50 / 0.20 left
-AB1A5	Slick 6351 (2)	44.70 / 17.60 ⁽⁶⁾	1.95 / 0.77 below	0.50 / 0.20 left
-AC1A5	Slick 6351 (2)	45.79 / 18.03	0.33 / 0.13 above	0.28 / 0.11 left
-K1G5	TCM S6LN-1227, S6LN-1227 or S6LN-1209	46.35 / 18.25	2.23 / 0.88 below	0.40 / 0.16 right

(4) For alternate magnetos see latest Textron Lycoming Service Instruction (S.I.) 1443.

(5) TCM formally Bendix\

(6) No alternate installed

NOTE 10 These engines incorporate provisions for absorbing propeller thrust in both tractor and pusher type installations.

NOTE 11 Refer to latest Lycoming Service Bulletin (S.B.) No. 369 for applicable inspection procedures of engines which have been operated above the specified max. continuous rpm rating (except momentary overspeed as defined in S.B.)



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