

**COMANDO DA AERONÁUTICA
DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO
CENTRO TÉCNICO AEROESPACIAL**

TYPE CERTIFICATE DATA SHEET Nº EM-8208-02

Type Certificate Holder:

TEXTRON LYCOMING – AVCO CORPORATION
625, Oliver Street
Williamsport, Pennsylvania, PA 17701
USA

EM-8208-02
Sheet 01

LYCOMING
O-540-A1D5, -B4B5,
-F1B5, -H2A5, -H1B5D,
-H2B5D, -J1A5D,
-J3A5

October 1999

Engines of models described herein conforming with this data sheet, which is part of Type Certificate No. 8208, 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.

MODEL	O-540-A1D5, -B4B5, -F1B5, -H2A5, -H1B5D, -H2B5D, -J1A5D, -J3A5				
TYPE	6HOA DIRECT DRIVE				
RATINGS	-B4B5	-F1B5	-H2A5, -H1B5D, -H2B5D	-J1A5D, -J3A5	-A1D5
	Max. continuous (hp-rpm; in Hg-ft):				
	235-2 575; FT-SL	235-2 800; 26.0-SL	260-2700; FT-SL	235-2 400; FT-SL	260-2 700; FT-SL
	#	235-2 800; 25.0- 4000	#	#	#

	-B4B5	-F1B5	-H2A5, -H1B5D, H2B5D	-J1A5D, -J3A5	-A1D5
Takeoff, (5 min.) (hp-rpm; in Hg-ft):			-		
Sea level pressure altitude:	235-2575; FT-SL	260-2800; 28.0-SL	260-2700; FT-SL	235-2400; FT-SL	260-2700; FT-SL
Critical pressure altitude:	#	260-2800; 27.5-800	#	#	#
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	Precision Airmotive Corporation (PAC) (formerly Marvel Schebler / Facet) :	PAC MA-4-5	--	--	--
OIL, LUBRICATION	Lubricants should conform to the specifications as listed or to subsequent revisions thereto:	Lycoming Specification No. 301-F and Service Instruction No. 1014.			
Oil sump capacity, qt. :	12	--	--	--	--
Minimum safe oil quantity, qt.					
20° nose up or down attitude:	2.75	--	--	--	--
30° nose up attitude:	4.00	--	--	--	--
TEMPERATURE LIMITS	See Note 1	--	--	--	--
PRESSURE LIMITS	See Note 2	--	--	--	--
CRANKSHAFT DAMPERS	See Note 5 & 6	--	--	--	--

		-B4B5	-F1B5	-H2A5, -H1B5D, H2B5D	-J1A5D, -J3A5	-A1D5
IGNITION	Ignition, Dual:	See Note 8	--	--	--	--
	Timing °BTC:	25	--	--	--	--
	Spark Plugs:	See Note 7	--	--	--	--
COMPRESSION	Ratio:	7.20:1	8.50:1	--	--	--
	Bore x Stroke, in:	5.125 x 4.375	--	--	--	--
	Displacement, cu in:	541.5	--	--	--	--
WEIGHT (dry)	Weight:	See Note 5	--	--	--	--
C.G. LOCATION (dry)					-J1A5D	
	From front face of prop. shaft flange, in:	17.9	--	--	17.75	17.9
	Off propeller shaft. C.L., in:	1.21 below 0.15 left	--	--	0.75 below 0.19 left	1.21 below 0.15 left
					-J3A5	
	From front face of prop. shaft flange, in:				17.99	
	Off propeller shaft. C.L., in:				1.21 below 0.08 left	
PROPELLER SHAFT-SPECIFICATIONS	AS-127	Type 2 flange modified	--	--	--	--

-- Same as preceding # Does not apply

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 CTA approved type design.

CERTIFICATION BASIS	Car 13 effective June 15, 1956 as amendments by:	Application	Issued TC	
	13-4	-B4B5	05 Dec. 1980	13 May 1982
	13-4	-H1B5D	05 Dec. 1980	13 May 1982
	13-4	-H2B5D	05 Dec. 1980	13 May 1982
	13-1 & 13-2	-F1B5	13 Jan. 1994	10 Aug. 1994
	13-4	-J1A5D	27 July 1998	18 Aug 1998
	13-4	-J3A5	27 July 1998	18 Aug 1998
	13-4	A1D5	28 May 1999	05 Oct. 1999
	13-4	-H2A5	28 May 1999	05 Oct. 1999

PRODUCTION BASIS Production Certificate No. 3

NOTES

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

Cylinder Head (well type)	260 / 500
Cylinder Base	163 / 325
Oil Inlet	118 / 245

NOTE 2 Pressure limits – psi / kPa

	Minimum	Maximum
Fuel –	0.50 / 3.44	8.00 / 55.15
Oil – Normal Operation	55.00 / 379.21	95.00 / 655.00
Idle	25.00 / 172.36	#
Starting & Warm-up	#	115.00 / 792.89

NOTE 3 The following accessory provisions are incorporated:

O-540-

Accessory	-F1B5	-J3A5	-H1B5D	J1A5D	Rotation facing	Speed Ratio to	Max. Torque (in lb)		Max. Overhang
			-H2B5D		Drive Pad	Crankshaft	Cont	Static	Moment (in lb)
Starter	#	*	*	*	CC	16.5560:1	#	450	150
Starter	*	#	#	#	CC	13.5560:1	#	450	150
Generator	*	#	#	#	C	1.9100:1	60	120	175
Generator	#	#	#	#	C	2.5000:1	60	120	175
Alternator	#	*	*	*	C	3.2500:1	60	120	175
Alternator	**	#	**	#	C	3.6300:1	60	120	175
Vacuum Pump	*	**	*	*	CC	1.3000:1	70	450	25
Hydraulic Pump	*	**	#	#	C	1.3850:1	100	800	40
Hydraulic Pump	#	#	*	*	C	1.3000:1	100	800	40
Tachometer	*	*	*	*	C	0.5000:1	7	50	5
Prop. Governor	#	#	#	#	C	0.8950:1	125	1200	25
Prop. Governor	#	**	*	*	C	0.9470:1	125	1200	25
Fuel Pump	**	#	**	#	CC	1.0000:1	25	#	25
Fuel Pump(Plunger)	**	*	**	**	#	0.5000:1	#	#	10

"#" Does not apply

* Standard

** Optional

"C" Clockwise

"CC" Counter Clockwise

NOTE 3
(cont.)

O-540-

Accessory				Rotation facing	Speed Ratio to	Max. Torque (in lb)		Max. Overhang
	-A1D5	-B4B5	-H2A5	Drive Pad	Crankshaft	Cont	Static	Moment (in lb)
Starter	*	*	*	CC	16.5560:1	#	450	150
Starter	#	#	#	CC	13.5560:1	#	450	150
Generator	*	*	#	C	1.9100:1	60	120	175
Generator	**	**	#	C	2.5000:1	60	120	175
Alternator	**	**	*	C	3.2500:1	60	120	175
Alternator	**	**	**	C	3.6300:1	60	120	175
Vacuum Pump	*	*	*	CC	1.3000:1	70	450	25
Hydraulic Pump	*	*	*	C	1.3850:1	100	800	40
Hydraulic Pump	#	#	#	C	1.3000:1	100	800	40
Tachometer	*	*	*	C	0.5000:1	7	50	5
Prop. Governor	*	*	*	C	0.8950:1	125	1200	25
Prop. Governor	#	#	#	C	0.9470:1	125	1200	25
Fuel Pump	**	**	**	CC	1.0000:1	25	450	25
Fuel Pump(Plunger)	**	**	**	#	0.5000:1	#	#	10
"#" Does not apply		* Standard	** Optional	"C" Clockwise	"CC" Counter Clockwise			

NOTE 4 These engines incorporate provisions for absorbing propeller thrust in both tractor- and pusher-type installations.**NOTE 5** These models incorporate additional characteristics as follows:

Model	Weight (kg / lb)	Characteristics
-A1A	170 / 374	Basic model, direct drive, six cylinder, horizontally opposed, air cooled engine with one each S6LN-20 and -21 Magnetos and two 6th order dampers.
-A1D5	170 / 375	Similar to -A1D except has one fifth and one sixth order crankshaft torsional dampers.

-B4B5	166 / 366	Similar to -B1B5 except has heavier fifth and sixth order crankshaft counterweights.
-F1B5	167 / 369	Same as -D1A5 except rated for helicopter application and incorporates provisions for either bed or dynafocal type mounting
-H2A5	175 / 385	Similar to -G2A5 except has different magnetos and incorporates piston cooling oil jets.
-H1B5D	173 / 381	Similar to -H1A5 except incorporates dual magneto (retard).
-H2B5D	173 / 381	Similar to -H1B5D except does not have provision for controllable propeller.
-J1A5D	161 / 356	Similar to -A1A5 except incorporates dual magneto (impulse coupling), less weight and rated at 235 hp at 2400 rpm
-J3A5	179 / 394	Similar to -J1A5D except equipped with slick magnetos.

NOTE 6 These engines incorporate crankshafts with two sixth order dampers unless a "5" is part of the model designation, i.e., -A1A5. Engines so designated have one fifth order damper and one sixth order damper instead of two sixth order dampers.

NOTE 7 Spark plugs approved for use on these engines are listed in the latest revision of Textron Lycoming Service Instruction No. 1042

NOTE 8 Ignition

Ignition, Dual TCM*

-A1D5	S6LN-204, S6LN-200
-B4B5	S6LN-204, S6LN-221
-F1B5	S6LN-204, S6LN-200
-H2A5	S6LN-20, S6LN-21
-H1B5D	D6LN-3230
-H2B5D	D6LN-3230
-J1A5D	D6LN-3031
-J3A5	Slick 6350 / 6351

* For alternate magnetos see latest copy of Textron Lycoming Service Instruction 1443, TCM formally Bendix, D6LN-2XXX series magnetos have been superseded by D6LN-3XXX series magnetos.

All models equipped with one impulse coupling magneto, may use two impulse coupling magnetos as optional equipment.

NOTE 9 Engine model O-540 -F1B5 is approved for helicopter application and operation in a horizontal installation.

NOTE 10 Model O-540 -B4B5 is equipped with fifth and sixth order crankshaft counterweights which are heavier than the usual fifth and sixth order counterweights employed in other O-540 engine models.

NOTE 11 Starters, generators and alternators approved for use on these engines are listed in the latest revision of Textron Lycoming Service Instruction No. 1154.

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