DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E-295
Revision 19
Lycoming Engines
O-540-A1A, -A1A5, -A1B5, -A1C5, -A1D, -A1D5, -A2B, -A3D5, -A4A5, -A4B5, -A4C5, -A4D5, -A4E5,
O-540-B1A5, -B1B5, -B1D5, -B2A5, -B2B5, -B2C5, -B4A5, -B4A5, -B4B5,
O-540-D1A5,
O-540-E4A5, -E4B5, -E4C5,
O-540-F1A5, -F1B5,
O-540-G1A5, -G2A5,
O-540-H1A5, -H2A5, -H1A5D, -H2A5D, -H1B5D, -H2B5D,
O-540-J1A5D, -J2A5D, -J1B5D, -J2B5D, -J3A5D, -J3A5, -J1C5D -J2C5D, -J1D5D, -J2D5D, -J3C5D, -L3C5D

April 30, 2013

TYPE CERTIFICATE DATA SHEET NO. E-295

Engines of models described herein conforming with this data sheet (which is a part of Type Certificate No. 295) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certificate aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations/Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate Holder	Lycoming Engines An Operating Division of AVCO Corporation Williamsport, Pennsylvania 17701
Type Certificate Holder Record	Avco Lycoming Williamsport Div., AVCO Corporation transferred TC E-295 to Lycoming Engines, An Operating Division of AVCO Corporation on December 17, 2003

Model Lycoming O-540	-A1A, -A1A5, -A1B5, -A1C5, -A1D, -A1D5, -A2B, -A3D5, -A4A5, -A4B5, -A4C5, -A4D5, -D1A5, -A4E5	-B1A5, -B1B5, -B1D5, -B2A5, -B2B5, -B2C5, -B4A5, -B4B5	-E4A5, -E4B5, -E4C5, -G1A5, -G2A5, -H1A5, -H2A5, -H1A5D, -H2A5D, -H1B5D, -H2B5D	-F1A5, -F1B5
Type 6HOA	Direct Drive	- -	- -	- -
Rating				
Maximum continuous, hp., r.p.m, in. Hg., at:				
Critical pressure altitude (ft.)	—	—	—	235-2800-25.0,4000
Sea level pressure altitude	250-2575-F.T.-S.L.	235-2575-F.T.-S.L.	260-2700-F.T.-S.L.	235-2800-26.0-S.L.
Takeoff (5 min.), hp., r.p.m., in. Hg., at:				
Critical pressure altitude (ft.)	—	—	—	260-2800-27.5-800
Sea level pressure altitude	250-2575-F.T.-S.L.	235-2575-F.T.-S.L.	260-2700-F.T.-S.L.	260-2800-28.0-S.L.
Fuel (Minimum grade aviation gasoline)	See NOTE 8	- -	- -	- -
Lubricating oil (lubricants which conform to the specifications as listed or to subsequent revision thereto.)	See Latest edition of Lycoming Service Instruction 1014	- -	- -	- -
Bore and stroke. in.	5.125 X 4.375	- -	- -	- -
Displacement, cu. in.	541.5	- -	- -	- -
Compression ratio	See NOTE 8	- -	- -	- -
Weight (dry)	See NOTE 5	- -	- -	- -
C.G. location (dry)	See NOTE 5	- -	- -	- -
From front face of prop shaft flange, in	17.9	- -	- -	- -
Off propeller shaft C.L., in.	1.21 below 0.15 left	- -	- -	- -
Propeller shaft-AS-127	Type 2 flange modified	- -	- -	- -
Carburetion**	LVC-5-5PA	- -	- -	- -
Ignition, dual	See NOTE 8	- -	- -	- -
Timing, °BTC	25	- -	- -	- -
Spark plugs	See NOTE 7	- -	- -	- -
Oil sump capacity, qt.	12	- -	- -	- -
Crankshaft dampers	See NOTE 5 & 6	- -	- -	- -
Minimum safe oil quantity qts.				
20°nose up or down attitude	2-3/4	- -	- -	- -
30°nose up attitude	4	- -	- -	- -
NOTES - As applicable	1 through 8, 10, 11	- -	- -	1 through 11

"- -" indicates "same as preceding model"
"—" indicates "does not apply"
** See latest revision of Lycoming Service Instruction 1523 for alternate carburetors.

Model Lycoming O-540	-J1A5D, -J2A5D, -J1B5D, -J2B5D, -J3A5D	-J1C5D, -J2C5D, -J3C5D, -J1D5D, -J2D5D	-L3C5D (See NOTE 12)	-J3A5
Type 6HOA	Direct Drive	- -	- -	- -
Rating				
Maximum continuous, hp., r.p.m, in. Hg., at:				
Critical pressure altitude (ft.)	—	—	—	—
Sea level pressure altitude	235-2400-F.T.-S.L.	235-2400-F.T.-S.L.	235-2400-F.T.-S.L.	235-2400-F.T.-S.L.
Takeoff (5 min.), hp., r.p.m., in. Hg., at:				
Critical pressure altitude (ft.)	—	- -	- -	- -
Sea level pressure altitude	235-2400-F.T.-S.L.	235-2400-F.T.-S.L.	235-2400-F.T.-S.L.	- -
Fuel (Minimum grade aviation gasoline)	See NOTE 8	- -	- -	- -
Lubricating oil (lubricants which conform to the specifications as listed or to subsequent revision thereto.)	See Latest edition of Lycoming Service Instruction 1014	- -	- -	- -
Bore and stroke. in.	5.125 X 4.375	- -	- -	- -
Displacement, cu. in.	541.5	- -	- -	- -
Compression ratio	See NOTE 8	- -	- -	- -
Weight (dry)	See NOTE 5	- -	- -	- -
C.G. location (dry)				
From front face of prop shaft flange, in	17.75	17.94	18.10	17.99
Off propeller shaft C.L., in.	0.75 below 0.19 left	0.69 below 0.19 left	0.59 below 0.34 left	1.21 below 0.08 left
Propeller shaft-AS-127	Type 2 flange modified	- -	- -	- -
Carburetion **	LVC-5-5PA	LHC-6-6BPA	LHC-6-6BA	LVC-5-5PA
Ignition dual	See NOTE 8	- -	- -	- -
Timing, °BTC	23	- -	- -	- -
Spark plugs	See NOTE 7	- -	- -	- -
Oil sump capacity, qts.	12	- -	- -	- -
Crankshaft dampers	See NOTE 5 & 6	- -	- -	- -
Minimum safe oil quantity qts.	- -	- -	- -	- -
20°nose up or down attitude	2-3/4	- -	- -	- -
30°nose up attitude	2	- -	- -	- -
NOTES - As applicable	1 through 8, 10, 11	- -	1 through 8, 10, 11, 12, 13	1 through 8, 11

"- -" indicates "same as preceding model"
"—" indicates "does not apply"
** See latest revision of Lycoming Service Instruction 1523 for alternate carburetors.

Certification basis:

Regulations and Amendments		Model	Date of Application	Date Type Certificate No. E-295 Issued/Revised
CAR 13 Effective June 15, 1956		O-540-A1A	July 2, 1957	October 31, 1957
As Amended By 13-1 & 13-2		O-540-A1A5	June 3, 1958	June 18, 1958
		O-540-A2B	July 24, 1958	July 24, 1958
		O-540-D1A5	October 21, 1958	August 12, 1959
		O-540-A1B5	January 21, 1959	February 10, 1959
		O-540-A1C5	March 16, 1959	April 2, 1959
		O-540-F1A5, -F1B5	April 3, 1959	August 12, 1959
		O-540-A1D, -A1D5	January 21, 1960	March 17, 1960
	13-3	O-540-A3D5	May 17, 1960	June 22, 1960
		O-540-B1A5, -B2A5	November 30, 1960	May 3, 1961
		O-540-B1B5	April 17, 1961	May 3, 1961
		O-540-B2B5	December 8, 1961	December 26, 1961
	13-4	O-540-A4A5, -A4B5, -A4C5, -A4D5, -B4A5, -B4B5	October 3, 1963	October 9, 1963
		O-540-E4A5, -E4B5	April 1, 1964	May 4, 1964
		O-540-E4C5	March 3, 1966	March 23, 1966
		O-540-B1D5, -B2C5	November 23, 1966	December 2, 1966
		O-540-G2A5	March 31, 1967	April 4, 1967
		O-540-G1A5	October 6, 1967	October 9, 1967
		O-540-H1A5, -H2A5	January 16, 1970	January 22, 1970
		O-540-H1B5D, -H2B5D	July 30, 1971	August 4, 1971
		O-540-H1A5D, -H2A5D	July 27, 1971	October 21, 1971
		O-540-J1B5D, -J2B5D	January 20, 1975	August 15, 1975
		O-540-J1C5D, -J2C5D -J1D5D, -J2D5D	August 25, 1976	October 4, 1976
		O-540-J3C5D	February 4, 1977	February 15, 1977
		O-540-J3A5D	November 23, 1977	November 30, 1977
		O-540-L3C5D	July 21, 1977	June 19, 1978
		O-540-J3A5	March 17, 1987	March 31, 1987
		O-540-A4E5	March 14, 2012	March 22, 2012

Production basis: Production Certificate No. 3

NOTE 1. Maximum permissible temperatures are as follows:

Cylinder Head (well type)	Cylinder Base	Oil Inlet
500°F	325°F	245°F

NOTE 2. Pressure limits - p.s.i.

	Minimum	Maximum
	0.5	30.0 (0-540-L3C5D: See NOTE No. 13)
Fuel	0.5	8.0
Oil (Normal operation)	55.0	95.0
(Idle)	25.0	—
(Starting and warm-up)	—	115.0

NOTE 3. The following accessory provisions are incorporated:

Accessory	-A1A, -A1A5, -A1B5, -A1C5, -A1D, -A1D5, -A4A5, -A4B5, -A4C5, -A4D5 -A4E5 -E4A5, -E4B5 -E4C5	A3D5	-A2B -B2A5 -B2B5 -B2C5 -G2A5	-B1A5 -B1B5 -B1D5, -B4A5 -B4B5, -G1A5	-D1A5	-H1A5 -H2A5	-F1A5 -F1B5	-L3C5D
Starter	*	*	*	*	*	*	—	*
Starter	—	—	—	—	—	—	*	—
Generator	*	*	*	*	*	—	*	—
Generator	**	**	**	**	**	—	—	—
Alternator	**	**	**	**	—	*	—	*
Alternator	**	**	**	**	**	**	**	**
Vacuum Pump	*	*	*	*	*	*	*	*
Hydraulic Pump	*	*	*	*	*	*	*	—
Hydraulic Pump	—	—	—	—	—	—	—	*
Tachometer	*	*	*	*	*	*	*	*
Propeller Governor	*	*	—	*	*	*	—	—
Propeller Governor	—	—	—	—	—	—	—	*
Fuel Pump	**	**	**	**	**	**	**	—
Fuel Pump (plunger)	**	*	**	**	**	**	**	*

Accessory	-H1A5D -H2A5D -H1B5D -H2B5D	-J2D5D -J2C5D	-J1A5D -J2A5D -J3A5D -J1B5D -J2B5D -J3C5D -J1D5D -J1C5D	-J3A5	All Models: Rotation Facing Drive Pad	All Models: Speed Ratio to Crankshaft	All Models: Maximum Torque (in. -lb.) Cont.	All Models: Maximum Torque (in. -lb.) Static	All Models: Max. Overhang Moment (in. -lb.)
Starter	*	*	*	*	CC	16.556:1	—	450	150
Starter	—	—	—	—	CC	13.556:1	—	450	150
Generator	—	—	—	—	C	1.010:1	60	120	175
Generator	—	—	—	—	C	2.500:1	60	120	175
Alternator	*	*	*	*	C	3.250:1	60	120	175
Alternator	**	**	—	—	C	3.630:1	60	120	175
Vacuum Pump	*	*	*	**	CC	1.300:1	70	450	25
Hydraulic Pump	—	—	—	**	C	1.385:1	100	800	40
Hydraulic Pump	*	*	*	—	C	1.300:1	100	800	40
Tachometer	*	*	*	*	C	1.500:1	7	50	5
Propeller Governor	—	—	—	—	C	0.895:1	125	1200	25
Propeller Governor	*	—	*	**	C	0.947:1	125	1200	25
Fuel Pump	**	—	—	—	CC	1.000:1	25	—	25
Fuel Pump (plunger)	**	**	**	**	—	0.500:1	—	—	10

"C" - Clockwise "CC" - Counter clockwise
* - Standard
** - Optional

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:

O-540-Models	Wt. dry, lb.	Characteristics
-A1A	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.
-A1A5	374	Same as -A1A except has one fifth and one sixth order dampers.
-A1B5	375	Same as -A1A5 except has propeller governor pad with short studs to accommodate AN type governor.
-A1C5	375	Same as -A1A5 except has two S6LN-21 impulse coupling magnetos.
-A1D	375	Similar to -A1B5 except has one each S6LN-200 and S6LN-204 magnetos and two sixth order crankshaft torsional dampers.
-A1D5	375	Similar to -A1D except has one fifth and one sixth order crankshaft torsional dampers.
-A2B	374	Same as -A1B5 except for crankshaft damper arrangement and propeller flange has propeller locating bushings displaced 60° clockwise, viewed facing propeller.
-A3D5	373	Similar to -A1D5 except has provisions for Goodrich propeller deicing equipment.
-A4A5	374	Similar to -A1A5 except has heavier fifth and sixth order crankshaft counterweights.
-A4B5	375	Similar to -A1B5 except has heavier fifth and sixth order crankshaft counterweights.
-A4C5	375	Similar to -A1C5 except has heavier fifth and sixth order crankshaft counterweights.
-A4D5	375	Similar to -A1D5 except has heavier fifth and sixth order crankshaft counterweights.
-A4E5	375	Same as –A4B5 except has side mounted oil gage and fill tube.
-B1A5	366	Same as -A1D5 except has lower compression ratio and performance.
-B1B5	366	Field conversion of -A1A5, -A1B5, or -A1C5 to lower compression ratio.
-B1D5	367	Same as -B1A5 except for incorporation of Bendix 1200 series magnetos.
-B2A5	366	Similar to -B1A5 except does not have provisions for controllable pitch propeller.
-B2B5	366	Same as -B2A5 except has S6LN-20 and S6LN-21 magnetos.
-B2C5	368	Same as -B2B5 except for incorporation of Bendix 1200 series magnetos and does not include generator as part of the engine.
-B4A5	366	Similar to -B1A5 except has heavier fifth and sixth order crankshaft counterweights.
-B4B5	366	Similar to -B1B5 except has heavier fifth and sixth order crankshaft counterweights.
-D1A5	369	Same as -A1A5 except has increased strength crankcase.
-F4A5	368	Similar to -A4D5 except has hybrid camshaft permitting higher 260 hp. @ 2700 r.p.m.
-E4B5	369	Similar to -A4D5 except for left magneto S6LN-21 and minor difference in weight and length.
-E4C5	370	Same as model -E4B5 except has S6LN-1227 and S6LN-1209 magnetos.
-F1A5	367	Same as -A1A5 except rated for helicopter application and incorporates prototype bed mounting.
-F1B5	369	Same as -D1A5 except rated for helicopter application and incorporates provisions for either bed or dynafocal type mounting.
-G1A5	386	Similar to -E4C5 except incorporates heavier crankshaft, different crankcase and -A1D5 counterweights.
-G2A5	386	Similar to -G1A5 except does not provide for use of constant speed propeller.
-H1A5	385	Similar to -G1A5 except has different magnetos and incorporates piston cooling oil jets.
-H2A5	385	Similar to -G2A5 except has different magnetos and incorporates piston cooling oil jets.
-H1A5D	381	Similar to -H1A5 except incorporates dual magneto (impulse coupling).
-H2A5D	381	Similar to -H1A5D except does not have provision for controllable propeller.
-H1B5D	381	Similar to -H1A5 except incorporates dual magneto (retard).
-H2B5D	381	Similar to -H1B5D except does not have provision for controllable propeller.
-J1A5D	356	Similar to -A1A5 except incorporates dual magneto (impulse coupling), less weight and rated at 235 h.p. @ 2400 r.p.m.
-J2A5D	356	Similar to -J1A5D except does not have provision for controllable propeller.
-J1B5D	356	Similar to -A1A5 except incorporates dual magneto (retard), less weight and rated at 235 h.p. @ 2400 r.p.m.
-J2B5D	356	Similar to -J1B5D except does not have provision for controllable propeller.
-J1C5D	356	Same as -J1A5D except has horizontal carburetor and induction housing.
-J2C5D	356	Same as -J1C5D except has no provision for controllable propeller.
-J1D5D	356	Same as -J1C5D but with D6LN-3230 retard breaker dual magneto.
-J2D5D	356	Same as -J1D5D except does not have provision for controllable propeller.

-J3C5D	357	Same as -J1C5D except has heavier counterweights for use with McCauley controllable propeller.

Note 5. These models incorporate additional characteristics as follows: cont.

-J3A5D	357	Same as -J1A5D except has heavier counterweights (same as O-540-J3C5D).
-L3C5D	367	Same as -J3C5D except for features to make engine suitable for turbocharging.
-J3A5	364	Same as -J3A5D 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 Lycoming Service Instruction No. 1042.

NOTE 8. Fuel grade, compression and ignition:

O-540-Models	Fuel - Aviation Gasoline	Compression Ratio	Ignition, Dual TCM *
-A1A	100 or 100 LL	8.50:1	S6LN-20, S6LN-21
-A1A5	100 or 100 LL	8.50:1	S6LN-20, S6LN-21
-A1B5	100 or 100 LL	8.50:1	S6LN-21, S6LN-21
-A1C5	100 or 100 LL	8.50:1	S6LN-21, S6LN-21
-A1D	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-A1D5	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-A2B	100 or 100 LL	8.50:1	S6LN-20, S6LN-21
-A3D5	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-A4A5	100 or 100 LL	8.50:1	S6LN-20, S6LN-21
-A4B5	100 or 100 LL	8.50:1	S6LN-21, S6LN-21
-A4C5	100 or 100 LL	8.50:1	S6LN-21, S6LN-21
-A4D5	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-A4E5	100 or 100 LL	8.50:1	S6LN-21, S6LN-21
-B1A5	100 or 100 LL	7.20:1	S6LN-204, S6LN-200
-B1B5	100 or 100 LL	7.20:1	S6LN-20, S6LN-21
-B1D5	100 or 100 LL	7.20:1	S6LN-1209, S6LN-1208
-B2A5	100 or 100 LL	7.20:1	S6LN-204, S6LN-200
-B2B5	100 or 100 LL	7.20:1	S6LN-20, S6LN-21
-B2C5	100 or 100 LL	7.20:1	S6LN-1209, S6LN-1227
-B4A5	100 or 100 LL	7.20:1	S6LN-204, S6LN-200
-B4B5	100 or 100 LL	7.20:1	S6LN-20, S6LN-21
-D1A5	100 or 100 LL	8.50:1	S6LN-20, S6LN-21
-E4A5	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-E4B5	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-E4C5	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-F1A5	100 or 100 LL	8.50:1	S6LN-20, S6LN-21
-F1B5	100 or 100 LL	8.50:1	S6LN-204, S6LN-200
-G1A5	100 or 100 LL	8.50:1	S6LN-1227, S6LN-1209
-G2A5	100 or 100 LL	8.50:1	S6LN-1227, S6LN-1209
-H1A5	100 or 100 LL	8.50:1	S6LN-20, S6LN-21
-H2A5	100 or 100 LL	8.50:1	S6LN-20, S6LN-21

* For Alternate magnetos see latest copy of Lycoming Service Instruction 1443, TCM formally Bendix

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

Note 8. Cont.

O-540-Models	Fuel - Aviation Gasoline	Compression Ratio	Ignition, Dual TCM *
-H1A5D	100 or 100 LL	8.50:1	D6LN-3031
-H2A5D	100 or 100 LL	8.50:1	D6LN-3031
-H1B5D	100 or 100 LL	8.50:1	D6LN-3230
-H2B5D	100 or 100 LL	8.50:1	D6LN-3230
-J1A5D	100 or 100 LL	8.50:1	D6LN-3031
-J2A5D	100 or 100 LL	8.50:1	D6LN-3031
-J1B5D	100 or 100 LL	8.50:1	D6LN-3230
-J2B5D	100 or 100 LL	8.50:1	D6LN-3230
-J1C5D	100 or 100 LL	8.50:1	D6LN-3031
-J2C5D	100 or 100 LL	8.50:1	D6LN-3031
-J1D5D	100 or 100 LL	8.50:1	D6LN-3230
-J2D5D	100 or 100 LL	8.50:1	D6LN-3230
-J3A5	100 or 100LL	8.50:1	Slick 6350 / 6351
-J3C5D	100 or 100 LL	8.50:1	D6LN-3031
-J3A5D	100 or 100LL	8.50:1	D6LN-3031
-L3C5D	100 or 100 LL	8.50:1	D6LN-3031

* For Alternate magnetos see latest copy of Textron Lycoming Service Instruction 1443, TCM formerly 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 models O-540-F1A5 and -F1B5 are approved for helicopter application and operation in a horizontal installation.

NOTE 10. Models O-540-A4A5, -A4B5, -A4C5, -A4D5, -A4E5, -B4A5, -B4B5, -E4B5, -E4A5, and -E4C5 are 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 Lycoming Service Instruction No. 1154.

NOTE 12. When equipped in accordance with Cessna Dwg. 2250065, this engine is certified for operation at a maximum manifold pressure of 31.0 in. Hg at 2400 r.p.m.

NOTE 13. When complying with Lycoming Service Instruction No. 1398, the minimum permissible fuel pressure increase from 0.5 psi to 3 psi. Therefore, revised fuel pressure gage marking indicating a minimum red line of 3 psi is required.

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