

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E26EA
Revision No. 4
AVCO
Lycoming
TO-360-A1A6D, -C1A6D, -E1A6D, -F1A6D
LTO-360-A1A6D, -E1A6D

March 20, 1986

TYPE CERTIFICATE DATA SHEET NO. E26EA

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. E26EA) 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 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 AVCO Lycoming Williamsport Division
AVCO Corporation
Williamsport, Pennsylvania 17701

Model	Lycoming	TO-360-A1A6D: LTO-360 A1A6D	TO-360-C1A6D: TO-360-F1A6D	TO-360-E1A6D LTO-360-E1A6D
Type 4HOA Direct Drive Turbosupercharged				
Rating (See NOTE 4)				
Max. continuous, hp., r.p.m., in. Hg. at:				
	Standard density critical alt. ft.	198-2575-40.0-10,000	207-2575-42.0-10,000	180-2575-36.5-12,000
	Standard density 5000 ft. alt.	200-2575-40.0-5,000	—	—
	Standard density sea level alt. ft.	196-2575-40.0-S.L.	210-2575-42.0-S.L.	—
Takeoff (5 min.), hp., r.p.m., in. Hg. at:				
	Standard density critical alt. ft.	198-2575-40.0-10,000	207-2575-42.0-10,000	180-2575-36.5-12,000
	Standard density 5000 ft. alt.	200-2575-40.0-5,000	—	—
	Standard density sea level alt. ft.	196-2575-40.0-S.L.	210-2575-42.0-S.L.	—
Fuel (minimum grade aviation gasoline)				
		100 or 100LL	--	--
Lubricating oil (lubricants should conform to the specification as listed or to subsequent revisions thereto)				
		Lycoming Spec. No. 301-F	--	--
Bore and stroke, in.				
		5.125 x 4.375	--	--
Displacement, cu. in.				
		361.0	--	--
Compression Ratio				
		8.0:1	7.30:1	8.0:1
Weight (dry), lb.				
		326	343	315
C.G. location (with starter and alternator installed)				
	From front face of prop. mounting flange, in.	15.50	15.27	15.94
	Off crankshaft C.L., in.	0.975 below & 0.10 left	0.53 below & 0.88 right	0.75 below & 0.41 left
Propeller shaft flange, SAE No.				
		Type 2 modified	--	--
Propeller shaft flange, SAE No.				
		Type 2 modified	--	--
Crankshaft dampers (torsional)				
		one 6.3 order	--	--
		one 8th order	--	--
Carburetion				
		Marvel HA-6	--	--
Turbosupercharger				
		Rajay 301E10-2	--	AiResearch TA04

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Model	Lycoming (cont'd)	TO-360-A1A6D: LTO-360 A1A6D	TO-360-C1A6D: TO-360-F1A6D	TO-360-E1A6D LTO-360-E1A6D
Ignition, dual		Bendix: D4RN-3021 (LTO): D4LN-3021 (TO)	D4LN-3021	D4LN-3021 (LTO): D4RN-3021 (TO)
Ignition timing°BTC	20		--	--
Spark plugs	See NOTE 6		--	--
Oil sump capacity, qt.	8		--	--
Usable oil, qt. 20° nose up or down	6		--	--
NOTES	1 through 10		--	--

CERTIFICATION BASIS:

Regulations & Amendments

FAR 33, 33-1 effective February 1, 1965, As Amended by 33-2 & 33-3

<u>Model</u>	<u>Date of Application</u>	<u>Date Type Certificate E26EA Issued/Revised</u>
TO-360-A1A6D	March 6, 1973	January 9, 1974
LTO-360-A1A6D	March 6, 1973	January 9, 1974
TO-360-C1A6D	December 10, 1975	February 9, 1976
TO-360-F1A6D	January 30, 1979	March 23, 1979
TO-360-E1A6D	July 19, 1979	September 28, 1979
LTO-360-E1A6D	July 19, 1979	September 28, 1979

Production basis: Production Certificate No. 3

NOTE 1. Maximum permissible temperatures:

Cylinder head (well type thermocouple)	500°F
Cylinder base	See NOTE 5
Oil inlet	245°F
Carburetor inlet air (max) 160°F (-A1A6D)	
	All other models 350°F
Exhaust gas (turbo inlet at location shown on Lycoming Drawing No. 63441)	1650°F (-E1A6D) All other models 1725°F
Magneto (at coil core)	225°F

NOTE 2. Pressure limits:

	<u>Minimum</u>	<u>Maximum</u>
Fuel pressure limits (above carburetor inlet air pressure) at inlet to carburetor		
-A1A6D	0.5 p.s.i.	8 p.s.i.
-C1A6D; -F1A6D	15 p.s.i.	30 p.s.i.
-E1A6D	13 p.s.i.	30 p.s.i.
Fuel pressure limits at inlet to engine fuel pump		
-A1A6D; -C1A6D; -E1A6D; -F1A6D	-2 p.s.i.	30 p.s.i.
Manifold pressure limits: -A1A6D	—	40 in. Hg.
-C1A6D; -F1A6D	—	43.75 in. Hg.
Exhaust back pressure limit (at turbocharger exhaust flange)	—	0.5 in. Hg.
Oil pressure limits:		
Normal (-A1A6D; -E1A6D)	60 p.s.i.	95 p.s.i.
Normal (-F1A6D; -C1A6D)	50 p.s.i.	95 p.s.i.
Idle	25 p.s.i.	—
Idle (-E1A6D)	15 p.s.i.	—
Starting and warm-up	—	100 p.s.i.
Starting and warm-up (-E1A6D; -F1A6D; -C1A6D)	—	115 p.s.i.

NOTE 3. The following accessory provisions are available:

Accessory	TO-360		TO-360 -E1A6D	LTO-360 -E1A6D	Rotation		Speed Ratio To Crankshaft	Maximum		Maximum Overhang Moment in.-lb.
	-A1A6D	LTO-360 -A1A6D			Facing	Drive Pad		Torque	Torque	
	-F1A6D	-C1A6D			TO	LTO		in.-lb.	in.-lb.	
Starter	*	*	*	*	CC	C	16.556:1	—	450	150
Alternator	*	*	*	*	C	CC	3.250:1	60	120	175
Vacuum Pump	**	**	—	—	CC	C	1.300:1	70	450	25
Vacuum Pump	—	—	*	*	CC	C	1.313:1	70	450	25
Hydraulic Pump	**	**			C	CC	1.300:1	100	800	40
Hydraulic Pump	**	**			C	CC	1.300:1	180	2200	150
Tachometer	*	*	*	*	C	CC	.500:1	7	50	5
Propeller Governor	**	**	—	—	C	CC	.895:1	125	1200	40
Propeller Governor	—	—	*	*	CC	C	1.000:1	125	1200	40
Fuel Pump	*	*	*	*	Plunger		.500:1	—	—	10

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

NOTE 4. Engine models -A1A6D, -C1A6D, -F1A6D are equipped with a Rajay Model 301E10-2 turbocharger mounted as an integral part of the engine. Performance data for these engines are presented on Lycoming Curve Number 13247 (-A1A6D) and 13280 (-C1A6D) (-F1A6D) Engine Model -E1A6D is equipped with AiResearch TA04 turbocharger mounted as an integral part of the engine. Performance data for this engine is presented on Lycoming Curve No. 13369.

These turbocharger models meet the containment requirements of FAR 33-27 and do not require external protection.

NOTE 5. Cylinder base temperature limits are not applicable to engine models which incorporate internal piston cooling oil jets.

NOTE 6. Spark plugs approved for use on these engines are listed in the latest revision of AVCO Lycoming Service Instruction No. 1042.

NOTE 7. These engines incorporate the following similarities or differences:

Model

- TO-360-A1A6D - Basic model-four cylinder air cooled, horizontally-opposed, direct drive, carbureted, turbocharged, engine incorporating internal piston cooling oil jets.
- LTO-360-A1A6D - Similar to TO-360-A1A6D except has counter-clockwise (reverse) rotation.
- TO-360-C1A6D - Similar to TO-360-A1A6D except power increased, lower compression ratio and carburetor located after the turbocharger instead of before the turbocharger.
- TO-360-F1A6D - Same as TO-360-C1A6D except has provisions for a rear type mounting (long type 1.12" conical mount).
- TO-360-E1A6D - Same as TO-360-E1A6D except equipped with AiResearch TA402 turbocharger, 8.0:1 compression ratio pistons, piston cooling oil jets and high pressure fuel pump.
- LTO-360-E1A6D - Similar to TO-360-E1A6D except has counter-clockwise rotation.

NOTE 8. These engines incorporate provisions for absorbing propeller thrust in both tractor and pusher installations.

NOTE 9. Starters and alternators approved for use on these engines are listed in the latest revision of the AVCO Lycoming Service Instruction No. 1154.

NOTE 10. All models equipped with one impulse coupling magneto, may use two impulse coupling magnetos as optional equipment.

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