

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

E16EA  
Revision 6  
Lycoming Engines  
TIO-360-A1A  
TIO-360-A1B  
TIO-360-A3B6  
TIO-360-C1A6D  
November 04, 2010

TYPE CERTIFICATE DATA SHEET NO. E16EA

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. E16EA) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certification 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 manual 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 Division, AVCO CORP. Williamsport PA transferred  
TC E16EA to Lycoming Engines, An Operating Division of AVCO Corporation on  
November 04, 2010

Model	Lycoming	TIO-360-A1A, -A1B	TIO-360-A3B6	TIO-360-C1A6D
Type	6HOA Direct Drive Turbocharged			
Rating (See NOTE 4)				
Maximum continuous hp., r.p.m., in Hg. at:				
Standard density critical alt. ft.	200-2575-37.5-15,000	200-2575-47.5-25,000	207-2575-44.0-10,000	207-2575-44.0-10,000
Standard density sea level alt. ft.	200-2575-34.0-S.L.	200-2575-34.1-S.L.	210-2575-44.0-S.L.	210-2575-44.0-S.L.
Takeoff (5 min.), hp. r.p.m., in Hg.	200-2575-37.5-15,000	200-2575-47.5-25,000	207-2575-44.0-10,000	207-2575-44.0-10,000
Standard density critical alt. ft.	200-2575-34.0-S.L.	200-2575-34.1-S.L.	210-2575-44.0-S.L.	210-2575-44.0-S.L.
Standard density sea level alt. ft.	100/100LL	--	--	--
Fuel (minimum grade aviation gasoline)		--	--	--
Lubricating oil	See Latest Edition of Lycoming Service Instruction No. 1014	--	--	--
Bore and stroke, in.	5.125 x 4.375	--	--	--
Displacement, cu. in.	361.0	--	--	--
Compression Ratio	7.30:1	--	--	--
Weight (dry), lb.	355	364	348	348
C.G. Location (with starter and alternator installed)	18.51	18.01	15.27	15.27
From front face of prop mounting flange, in.	1.35 below	1.45 below	0.53 below	0.53 below
Off crankshaft C.L., in.	0.15 left	0.01 left	0.88 right	0.88 right
Propeller shaft flange, SAE No.	type 2 modified (AS 127)	--	--	--
Crankshaft dampers (torsional)	See NOTE 9	--	--	--
Fuel injection +	PAC* RSA-5AD1	--	--	--

"- -" Indicates "same as preceding model"

"—" Indicates "does not apply"

+ For alternate fuel injectors see latest edition of Lycoming Service Instruction 1532

\* PAC formerly Bendix

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Model	Lycoming	TIO-360-A1A, -A1B	TIO-360-A3B6	TIO-360-C1A6D
Turbocharger		Kelly Aerospace <sup>+</sup> T04	--	Kelly Aerospace <sup>+</sup> 3BT1EE10J2
Ignition, dual		Bendix S4LN-1208, S4LN-1209	--	D4LN-3000
Ignition timing °BTC		20	--	--
Spark plugs		See NOTE 6	--	--
Oil Sump Capacity, qt.		8	--	--
Usuable oil, qt. (30° nose up or down)		6	--	--
NOTES		1,2,3,4,5,6,7,8,9	--	--

"- -" Indicates "same as preceding model."

"—" Indicates "does not apply."

<sup>+</sup>Kelly Aerospace formerly AiResearch, formerly Roto-Master

#### CERTIFICATION BASIS.

<u>Regulations &amp; Amendments</u>	<u>Model</u>	<u>Date of Application</u>	<u>Date Type Certificate E16EA Issued/Revised</u>
FAR 33, 33-1 effective February 1, 1965, as amended by 33-2 33-3	TIO-360-A1A TIO-360-A1B TIO-360-A3B6 TIO-360-C1A6D	March 10, 1967 November 13, 1967 January 18, 1972 March 7, 1983	November 20, 1967 November 20, 1967 February 16, 1972 March 16, 1983

Production basis: Production Certificate No. 3

#### NOTE 1. Maximum permissible temperatures:

Cylinder head (well type thermocouple)	500°F
Cylinder base	NOTE 5
Oil inlet	245°F
Fuel injector inlet air	400°F
Exhaust gas (turbo inlet at location shown on Lycoming installation Drawing)	1650°F

#### NOTE 2. Fuel, Air, and Oil Pressure Limits:

	<u>Min.</u>	<u>Max.</u>	<u>Idle (min)</u>	<u>Idle Cutoff</u>
Fuel pressure limits (above fuel injector inlet air pressure)				
at inlet to engine fuel injector	20 p.s.i.	45 p.s.i.	12 p.s.i.	-
at inlet to engine fuel pump	22 p.s.i.	65 p.s.i.	-	
-A1A, -A1B	-2 p.s.i.	50 p.s.i.	-	Max. 55 p.s.i.
-A3B6, -C1A6D	-2 p.s.i.	65 p.s.i.	-	-
Fuel injector inlet air pressure				
-A1A, -A1B	-	40 in. Hg.	-	
-A3B6	-	47.5 in. Hg.	-	
Manifold pressure (cumulative total with altitude adjustment)	-			
-A1A, -A1B	-	40 in. Hg.	-	
-A3B6	-	47.5 in. Hg.	-	
-C1A6D	-	44.0 in. Hg.	-	

Oil pressure limits: Oil pressure may be measured at either the accessory housing or top of crankcase for TIO-360-A models.

	<u>Accessory Housing</u>			OR	<u>Top of Crankcase</u>		
	<u>Min.</u>	<u>Max.</u>	<u>Idle</u>		<u>Min.</u>	<u>Max.</u>	<u>Idle</u>
Normal	55 p.s.i.	95 p.s.i.	25 p.s.i.		49 p.s.i.	89 p.s.i.	22 p.s.i.
Start, warm-up, taxi & takeoff	-	115 p.s.i.	-		-	109 p.s.i.	-

NOTE 3. The following accessory provisions are available:

Accessory	TIO-360 -A1A, - A1B	TIO- 360 -A3B6	TIO- 360 -C1A6D	Rotation Facing Drive Pad	Speed Ratio to Crankshaft	Maximum Torque (in. -lb.)		Maximum Overhang Moment (in. lb.)
						Continuous	Static	
Starter	*	*	-	CC	16.556:1	-	450	150
Generator	*	-	-	C	1.910:1	60	120	175
Generator	**	-	-	C	2.500:1	60	120	175
Alternator	**	*	*	C	3.250:1	60	120	175
Vacuum Pump	*	*	*	CC	1.300:1	70	450	25
Tachometer	*	*	*	C	0.500:1	7	50	5
Propeller Governor	*	-	**	C	1.182:1 (.895:1 for -C1A6D)	125	1200	40
Fuel pump	*	*	*	CC	1.000:1	25	450	25
Optional Dual Drive Mounting on Vacuum Pump Drive Pad: -A1A, -A1B								
Vacuum pump	**	-	**	CC	1.300:1	70	450	6
Hydraulic pump	**	-	**	CC	1.300:1	Total	Total	10
(C for -C1A6D)								
* Standard	"C" = Clockwise	"CC" = Counter Clockwise	**Optional					

NOTE 4. The TIO-360-A1A, -A1B and -A3B6 are equipped with a Kelly Aerospace (formerly AiResearch) Model TC4 and the -C1A6D is equipped with a Kelly Aerospace (formerly Roto-Master) 3BTIEE10J2 turbocharger mounted as an integral part of the engine.

Performance data for these models are presented by Lycoming Curve Nos. 13079-A1A, A1B; 13224-A3B6; 13430-C1A6D.

The turbocharger meets the containment requirements of FAR 33-27 and does 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 Lycoming Service Instructions No. 1042.

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

TIO-360-A1A	Basic model - four cylinder air cooled, horizontally - opposed direct drive, fuel injected, tuned induction turbocharged engine incorporating internal piston cooling oil jets.
TIO-360-A1B	Similar to -A1A except has straight tubular casting in induction system without pressure differential door on 14° down fuel injector adapter.
TIO-360-A3B6	Similar to -A1B except equipped with one 6.3 order and one 8th order counterweights and has a pressurized ignition system for high altitude operation.
TIO-360-C1A6D	Similar to T0-360-C1A6D except for PAC (formerly Bendix) RSA-5AD1 fuel injector instead of Volare (formerly Marvel-Schebler) HA-6 carburetor.

NOTE 8. Starters, generators and alternators approved for use on these engines are listed in the latest revision of the Lycoming Service Instruction No. 1154.

NOTE 9. Engines of this series incorporate no crankshaft dampers unless the third section of the model designation exhibits a numerical digit in its fourth position, i.e., TIO-360-A3B6. The digit "6" in the fourth position indicates the incorporation of one 6.3 order and one eight order counterweights.

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