

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

TCDS NUMBER E00006NY
Revision No. 1
LYCOMING ENGINES

MODEL : IO-390-A1A6, A3A6

August 27, 2009

TYPE CERTIFICATE DATA SHEET NO. E00006NY

Engines of models described herein conforming with this data sheet (which is a part of Type Certificate No. E00006NY) 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 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

Model: IO-390	A1A6, A3A6
Type	4 HOA Direct Drive
Rating Takeoff and Maximum continuous, hp., r.p.m. full throttle at: Sea level pressure altitude	210-2700-S.L.
Fuel	
Minimum grade aviation gasoline	100/100LL
Pressure	NOTE 2
Injector and pump	NOTE 6
Pump drive	NOTE 3
Oil, Lubrication	
(Lubricants should conform to the specification as listed or to subsequent revisions thereto)	Service Instruction 1014
Temperature	NOTE 1
Pressure	NOTE 2
Sump capacity, qt.	8
Usable oil qt.	2
Ignition, dual	
Magnetos	NOTE 6
Timing °BTC	20
Spark plugs	NOTE 4
Bore and stroke, in.	5.319 x 4.375
Displacement, cu. in.	389
Compression Ratio	8.9:1
Weight (dry) lb.	NOTE 6
C.G. Location	NOTE 6
Propeller shaft, SAE No. AS-127	Flange, Type 2 Modified
NOTES	1,2,3,4,5,7,8,9

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Certification basis:

Regulations & Amendments FAR 33 effective February 1, 1965, as amended by 33-1 through 33-24

Model	Date of Application	Date Type Certificate No. E00006NY Issued/Revised
IO 390-A1A6	April 11, 2008	March 30, 2009
A3A6	February 20, 2009	August 27, 2009

Production basis: Production Certificate No. 3

NOTE 1. Maximum permissible temperatures:

Cylinder Head (Well Type Thermocouple) 465°F	Oil Inlet 235°F
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NOTE 2. Pressure limits:

Fuel:

IO-390-A1A6, A3A6

Inlet to Fuel Pump			Inlet to Injector		
<u>Maximum</u>	<u>Minimum</u>	Maximum with Injector Idle Cutoff	<u>Maximum</u>	<u>Minimum</u>	<u>Minimum Idle</u>
35 p.s.i.	-2 p.s.i.	55 p.s.i.	—	—	—

Boost Pump Outlet Limits to Injector:

	<u>Parallel Boosts</u>		<u>Series Boosts</u>	
	<u>Maximum</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Minimum</u>
Zero fuel flow	45 p.s.i.	—	35 p.s.i.	—
Maximum fuel flow	—	14 p.s.i.	—	14 p.s.i.

Oil:

	<u>Maximum</u>	<u>Minimum</u>
Normal	95 p.s.i.	55 p.s.i.
Idle	—	25 p.s.i.
Starting and warm-up	115 p.s.i.	—

NOTE 3. The following accessory provisions are available:

Accessory	A1A6 A3A6	Direction of Rotation	Drive Ratio	Maximum Torque (in. lb)		Maximum Overhang Moment
				Continuous	Static	
Starter	*	CCw	13.556:1	--	450	150
Alternator	*	Cw	3.20:1	60	120	175
Accessory Drive	*	CCw	1.300:1	70	450	25
Tachometer	*	Cw	0.500:1	7	50	5
Fuel Pump	*	Plunger	0.500:1	-	-	10
Propeller Governor	*	Cw	0.866:1	125	1200	40
Optional dual drives mounting on Accessory drive pad for:						
Accessory and Accessory	**	CCw	1.300:1	70	450	6
		CCw	1.300:1	Total	Total	10
Or:						
Accessory and Propeller Governor	**	CCw	1.300:1	70	450	6
		CCw	1.300:1	Total	Total	10

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

Total - refers to total torque of dual drives

NOTE 4. Spark plugs approved for use on this engine are listed in the latest revision of Lycoming Service Instruction No. 1042.

NOTE 5. These engines incorporate provisions for absorbing propeller thrust in both tractor and pusher installations.

NOTE 6. The following tabulations show std. dry weight (less alternator and starter), C.G.'s, fuel injectors, fuel pumps and magnetos for this model.

Model	Weight	Center of Gravity		Fuel Injector +	Fuel Pump	Ignition, Dual Slick
		From Front Face of Prop Shaft Flange in.	Off Crankshaft Center Line, in.			
IO-390- A1A6	307	14.13	.64 below .16 left	PAC RSA-5AD1	AC Type	4345 4370

A3A6

+ Precision Airmotive (PAC) formally Bendix

NOTE 7. The listed models incorporate the following additional similarities or differences:

Model	Characteristics
IO-390-A1A6	Basic Model. Four cylinder air-cooled, horizontally opposed, direct drive, fuel injected, tuned induction engine having oil jets for internal piston cooling. Provisions for single action controllable pitch propeller.
IO-390-A3A6	Same as the A1A6 except propeller flange bushings are reindexed.

NOTE 8. Starters and alternators approved for use on this engine are listed in the latest revision of Lycoming Service Instruction No. 1154

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