

Ly-Con
Aircraft Engines
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Ly-Con
160hp
STC SA00255SE
Supplemental Manual
For
Cherokee 140/150



By selecting the *Ly-Con* Rebuilding Co. 160 HP conversion, installed in your Piper Cherokee per STC SA00255SE you can expect some outstanding benefits in operating your Piper Cherokee 140/150. The *Ly-Con* conversion was designed to make flying this aircraft even more enjoyable as well as economical.

With a *Ly-Con* 160 you will experience

A power increase of 10 HP. resulting in an improved rate of climb, faster cruise speeds, and higher service ceiling.

More efficient use of 100 octane fuel. You'll find the SFC (specific fuel consumption) is approximately 6% less per horsepower due to the higher compression ratio of the 160 HP. engine.

Reduced maintenance costs due to a significant decline of fouling of spark plugs. This is a result of the 160 HP's higher combustion temperatures.

These benefits are all attained with a weight increase of 2.3 lbs. having virtually no effect on the planes center of gravity. there's no major difference in maintenance or operation of the 160 HP Cherokee compared to the standard model, except that

You Must Use 100 Octane or Higher Fuel.

Specifications

	PA 28 140*	PA 28 150 *	Ly-Con 160
Gross Weight lb.	2,150	2,150	2,150
Top Speed at sea level-MPH	139	141	142
Cruise Speed @ 75% Power. Opt. Alt.-MPH	130	130	133
Rate of Climb, Sea Level FPM	660	690	760
Service ceiling FT.	14,300	14,900	16,200
Absolute ceiling FT.	16,800	17,400	18,600
Take Off: Ground Roll FT.	800**	780**	730
Over 50 FT. Obstacle FT.	1,700	1,700	1,580
Landing : Ground Roll FT.	535	535	535
Over 50 FT. Obstacle FT.	1,070	1,070	1,070
Stall Speed: Flaps Down, Power Off MPH	54	54	54
Baggage (Normal Category only) LB.	200	200	200
Wing loading LB./SQ. FT.	13.4	13.4	13.4
Power Loading LB./HP.	14.3	14.3	13.4
Fuel Capacity: Standard Gal.	50	50	50
Fuel Usable Gal.	48	48	48
Oil Capacity Qt.	8	8	8
Propeller: Diameter inch.	74	74	74
Pitch Inch	58	58	58

Engine: Lycoming O-320	A2D E2A E3D	A2D/STC SE00252SE E2A/STC SE00252SE E3D/STC SE00252SE or D3G
Rated Horsepower	150 HP	160 HP

* Data From Cherokee Manuals

** Max Effort, 25 degree Flap

Performance

The Ly-Con 160 HP will have approx. 2.2% speed and range increase at a given percentage power over that of the standard 150 HP model.

To obtain the new range and performance, simply add 2% to the range vs. density charts in the Piper Cherokee Manual.

Take off, stall speeds, landing distances and maximum glide data can be used directly from the Piper Cherokee Manual.

Take off, stall speeds, landing distances and maximum glide data can be used directly from the Piper Cherokee Manual.

Climb performance is shown on page 5.

Because the propeller load determines the amount of power which can be absorbed with a fixed pitch propeller at a given RPM, production tolerance of individual propellers is important. Some variation of performance from airplane to airplane is, therefore, normal. Because there is usually no manifold pressure gauge in the Cherokee. Engine RPM is the primary power control for the aircraft. If there is any question regarding performance of the airplane, the tachometer should be calibrated at an FAA approved instrument repair facility or checked in the airplane with an approved tachometer checker.

To meet new FAA Part 36 noise criteria, maximum continuous engine speed is limited to 2500 RPM, although full engine power at 2700 RPM can be used for 5 minutes. Since the engine RPM does not exceed 2500 RPM in a normal climb, take off and climb performance is not affected by this limitation

With the above exceptions, all other limitations and placards applicable to the standard airplane, including weight and balance limits apply to this conversion.

Climb Performance

Climb Performance ft/min.

Maximum climb @ 2,150 lbs. gross weight @best rate of climb speed (IAS)
Standard day temperature.

Performance may vary due to variations in individual aircraft.

	PA28/140	PA28/150	Ly-Con 160 STC
Sea Level	660 fpm.	690 fpm.	760 fpm.
2,000 ft.	580 fpm.	610 fpm.	670 fpm.
4,000 ft	490 fpm.	520 fpm.	585 fpm.
6,000 ft	410 fpm.	435 fpm.	495 fpm.
8,000 ft	320 fpm.	345 fpm.	415 fpm.
10,000 ft	260 fpm.	285 fpm.	340 fpm.
12,000 ft	180 fpm.	200 fpm.	260 fpm.
14,000 ft	105 fpm.	125 fpm.	180 fpm.
16,000 ft	25 fpm.	45 fpm.	100 fpm.

Operation, Service and Maintenance

Fuel:

Never use any fuel less than **100 octane** in the Ly-Con 160 HP engine. You may use either 100LL (blue) or standard 100 octane (green) fuel.

Care Of The New Engine

Before run-in of the new engine and first flight, **Be sure to drain any 80 octane fuel from the aircraft's fuel system.** Then service the plane with 100 octane higher fuel, either 100LL or 100 standard.

Straight mineral (non additive) of the proper weight is advised for engine break-in. Consult the standard Piper Cherokee Owner's Manual for additional information. After initial break-in of the engine, when oil consumption has stabilized, ashless dispersant oil is recommended in accordance with Lycoming service instruction 1014. Break-in is normally completed between 25 and 50 hours of flight time, assuming that high power settings are used during the break-in period. Engines with chrome cylinders typically take longer to break-in than engines with plain steel or nitride cylinders. After initial run-in, it is important that high power settings are used during the break-in period. This accelerates ring seating and avoids cylinder wall glazing.

Time Between Overhauls

The power section of your Ly-Con 160 HP engine is identical to the well proven Lycoming O-320-A, O-320 -D and O-320 -E series engines. TBO (time between over- haul) of the Ly-Con 160 HP engine is the same as Lycoming O-320's i.e., 2000 hours as specified in Lycoming Service instruction 1009.

Maintenance

Service and maintenance of the 160 HP engine is the same as any other Lycoming O-320 series engine. Textron Lycoming and Avco Lycoming service letters, bulletins and service instructions that apply to the O-320 series will also apply to the O-320-A2D, E2A, E3D, STC /SE00252SE Conversions in the airplane, unless the service information is related to special parts which differ from the A2D, E2A, and E3D. These parts are listed on page 8 of this manual.

Lycoming Overhaul Manual 60294-7 and Operators Manual 60297-16 are both applicable to the Ly-Con 160 HP engine. Applicable equipment Manuals are also valid for the engine accessories, such as the carburetor, magneto's, starter, etc.

Parts

Avco Lycoming Parts Catalogs PC103(dated April 1970) or PC203 (dated January 1976) are applicable to the converted O-320-A2D/STC SE00252SE, O-320-E2A/STC SE00252SE, or O-320E3D/STC SE00252SE, except for the parts differences shown on the following page. Other than these parts, use Lycoming part numbers listed under the appropriate column in the parts catalog. For the O-320-D3G engine, use PC203 and Lycoming Parts Supplement SSP2076. All part numbers on the next page are Avco Lycoming except for the crankcase assembly, which is a Ly-Con Rebuilding Co. part number.

Page and Item numbers refer to Lycoming Parts Catalog PC203. Refer to the latest edition of Lycoming PC 203, Lycoming Service Bulletins and Lycoming Service Letters for superceded and superceding part numbers.

Propeller for the PA28/140 Conversion

Sensenich M74DM-0-58, or Sensenich 74DM6-0-58.

Piper Spinner P/N 14422-00 is required.

Replacement propellers can be purchased through Piper or Sensenich dealers

Propeller for the PA28/150 Conversion

Sensenich M74DM-0-58 (SN 1 thru 1760A)

Sensenich M74DMS-0-58 or 74DM6S5-0-58. (SN 1761 and higher)

Piper spinner P/N 14455-00 (SN 1 thru 1760A)

Piper P/N 63760-04 or 65805-00(S/N 1761 and higher)

Replacement propellers can be purchased through Piper or Sensenich dealers.

Placards used are the following Ly-Con Rebuilding Co. part numbers.

Placard-Fuel Filler Cap	150001-1 (2ea)
Placard-Stencil Overlay	150001-2 (2ea)

Parts

		<u>Engines</u>	<u>O-320A2D/STC SE00252SE</u>	
			<u>O-320-E2A/STC SE00252SE</u>	
PC	203	Item		
Page	No.	Description	Delete	Use
1-1	1	Crankcase Ass'y	N/A	N/A
	13	Dowel-Front	N/A	N/A
	13,14	Dowel-center & Rear	69796 (4)	LW-10647 (4)
1-7	8,9	Brg. Front	N/A	N/A
	7,9	Brg. Center & Rear	68763 (4)	LW-11021 (4)
3-1	6	Piston	75413 (4)	75089 (4)
	7	Piston Pin	77857 or LW-14068 (4)	LW-14078 (4)
	9	Ring-Top Comp.	74989 (8)	74673 (8)
	10	Ring-Oil Control	73857 (4)	73998 (4)
3-3	1	Cylinder Ass'y	75868 or LW-12417 (4)	75907 (4) LW-12419 (4) (Chrome)
3-4	2	Valve Exhaust	75068 (4)	74541 (4)

		<u>Engine</u>	<u>O-320-E3D/STC SE00252SE</u>	
PC	203	Item		
Page	No.	Description	Delete	Use
1-1	1	Crankcase Ass'y	LW-11062 or LW-13812	601002-1 (Ly-Con)
1-7	8,9	Brg. Front	67447 (4)	77044 or LW-13884 (2)
	7,9	Brg.-Center & Rear	67447 (4)	LW-11021 (4)
3-1	6	Piston	75413 (4)	75089 (4)
	7	Piston Pin	77857 or LW-14068	69650 or LW-14078 (4)
	9	Ring-Top Comp.	74989 (8)	74673 (8)
	10	Ring-Oil Control	73857 (4)	73998 (4)
3-3	1	Cylinder Ass'y	75868 or LW-12417 (4) (Plain)	75907 or LW-12419 (4) (Chrome)
3-4	2	Valve Exhaust	75068 (4)	74541 (4)

Part numbers listed are Avco Lycoming except as noted