Ly-Con

160hp

STC SA00261SE

Supplemental Manual
For

Cessna 172

Models I, K, L and M.
With Lycoming O-320 Engine

By selecting the Ly_Con Rebuilding Co. 160 HP STC SA00261SE conversion you can expect some outstanding benefits in operating your Cessna 172 Skyhawk. 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 spark plug fouling. This is a result of the Ly-con 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 Cessna 172 compared to the standard model, except that you **Must Use 100 or higher Octane fuel**.

Specifications

	Standard 150 hp *	Ly-Con 160 hp
Gross Weight lb.	2,300 lbs.	2,300 lbs.
Top Speed at sea level-MPH.	144 mph	147 mph
Cruise Speed @ 75% Power. MPH.	138 mph	141 mph
Rate of Climb, Sea Level fpm.	645 fpm	775 fpm
Service ceiling	13,100 ft.	14, 200 ft.
Take-Off: Ground Roll FT.	865 ft.	865 ft.**
Over 50 FT. Obstacle FT.	1,525ft.	1,525 ft.**
Landing: Ground Roll ft.	520 ft.	520 ft.
Over 50 FT. Obstacle ft.	1,250 ft.	1,250 ft.
Stall-Speed Flaps Up, Power Off	57 mph	57 mph
Stall-Speed: Flaps Down, Power Off MPH	49 mph	49 mph
Baggage lbs.	120 lb.	120 lb.
Wing loading lb./sq. ft.	13.2	13.2
Power Loading lb./HP.	15.3	14.4
Fuel Capacity: Standard Gal.	42 gal.	42 gal.
Optional Tanks Gal.	52 gal.	52 gal.
Oil Capacity Qt.	8 qt.	8 qt.
Propeller: Diameter inches.	75 in.	75 in.
Pitch Inch	53 in.	57 in.
Engine:	Lycoming O-320-E2D	Lycoming O-320-E2D/ SE00252SE
Rated Horsepower	150 HP	160 HP

* Data from Cessna 172 Manuals

** Take off performance change with 160 HP and 57-in. pitch propeller is considered to be negligible compared to a standard airplane

Performance

The Ly-Con 160 HP will average an increase of 2.2% in speed and range at a given percentage power over that of the standard 150 HP models. To obtain cruise speed or range performance of the converted aircraft, simply add 2.2% to the appropriate altitude/RPM data shown in the Performance Section of the Cessna 172 manual. Percent HP, fuel consumption and endurance should be nearly the same as shown for the 150 HP standard airplane.

Take off, stall speeds, landing distances and maximum glide data can be used directly from the Standard Cessna 172 Manual. Climb performance is shown in this manual.

Because the propeller load determines the amount of power that 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 172, 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

Maximum Rate of Climb -Ft./Min.

	Standard 150 Hp	**Ly-Con STC 160 Hp**
Sea Level	645 Ft./Min.	775 Ft/Min.
2,000 Ft.	560 Ft/Min	680 Ft/Min
4,000 Ft.	480 Ft./Min.	590 Ft./Min.
6,000 Ft.	390 Ft./Min.	495 Ft./Min.
8,000 Ft.	310 Ft./Min.	400 Ft./Min.
10,000 Ft.	220 Ft./Min	305 Ft./Min
12,000 Ft.	140 Ft./Min.	210 Ft./Min
14,000 Ft./Min	----------	115 Ft./Min

Maximum rate of climb @ 2,300 lbs. gross weight @ best rate of climb speed (IAS) at (Standard day temperatures).
Performance may vary due to variations in individual aircraft.

Operation, Service and Maintenance

Fuel:
Never use any fuel except **100 or higher octane** fuel in the Ly-Con 160 HP engine. You may use either 100LL (blue) or standard 100 octane (green) fuel. The Ly-Con 160Hp. will operate satisfactorily on either.

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 airplane with 100 octane fuel, either 100LL or 100 standard.
Straight mineral oil (non-additive) of the proper weight is advised for break-in. Consult the standard Cessna 172 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 nitrided 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-B-D and 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 160HP. engine is the same as any other Lycoming 0-320 series engine. Avco Lycoming service letters, bulletins, and instructions that apply to the 0-320-E2D will also apply to the 0-320-E3D/ SE00252SE in the airplane unless the service information is related to special parts which differ from the -E2D. These parts are listed in the parts list in 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 such items as the carburetor, magneto's , starter, etc.

The McCauley 1C160 propeller has been modified only to the extent of increasing the blade pitch from 53" to 57". Normal care and maintenance procedures still apply, as well as the standard McCauley propeller publications.

Parts List

Avco Lycoming Parts Catalogs PC103 (dated April 1970) or PC203 (dated Jan. 1976) are applicable to this engine, except for parts differences noted below.

Other than these parts, use Lycoming part numbers listed under the "E2D" column in the catalog.

In the following list, all part numbers are Avco Lycoming, except for the crankcase assembly, which is a Ly-Con Re-building Co. part number.

Page and item numbers refer to PC203

The propeller for the 160 HP conversion is either the McCauley 1C160/CTM7557 or 1C160/DTM7557.
Replacement propellers may be purchased through Cessna or McCauley, or the standard 53 inch pitch propeller used on the 150 HP Model 172 may be re-pitched to 57 inches at an FAA approved propeller repair station.

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

Placard-Fuel filler Cap	150001-1	(2ea)
Placard-Instrument Panel	150004-1	(1ea)
Placard-Tachometer	150006	(1ea)

Page	Item	Description	Lycoming O-320-E2D	Ly-Con 160 HP 0-320-E2D/ SE00252SE
1-1	1	Crankcase Assembly	LW-11062 or LW-13812	601002 (Ly-Con)
1-1	13	Front Dowel	69796 (4)	69796 (2)
1-1	13/14	Rear & Center dowels	69796 (4)	LW-10647 (4)
1-7	8/9	Front Bearings	67447 (4) or 68763	77044 or LW-13884 (2)
1-7	7/9	Rear & Center Bearings	67447 (4) or 68763	LW-11021 (4)
3-1	6	Piston	75413 (4)	75089 (4)
3-1	7	Piston pin	77857 (4) or LW-14078	LW-14078 (4)
3-1	9	Top Piston Ring	74989 (8)	74673 (8)
3-1	10	Oil Ring	73857 (4)	73998 (4)
3-3	1	Cylinders	75868 or LW-12417 (Plain) (4)	75907 or LW-12419 (Chrome) (4)
3-4	2	Exhaust Valve	75068 (4)	74541 (4)

Part numbers Listed are Avco Lycomig except as noted.
Refer to PC203 and Lycoming Service Bulletins and Service Letters for Superceded or Superceding Part numbers.

Aircraft Engines

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