


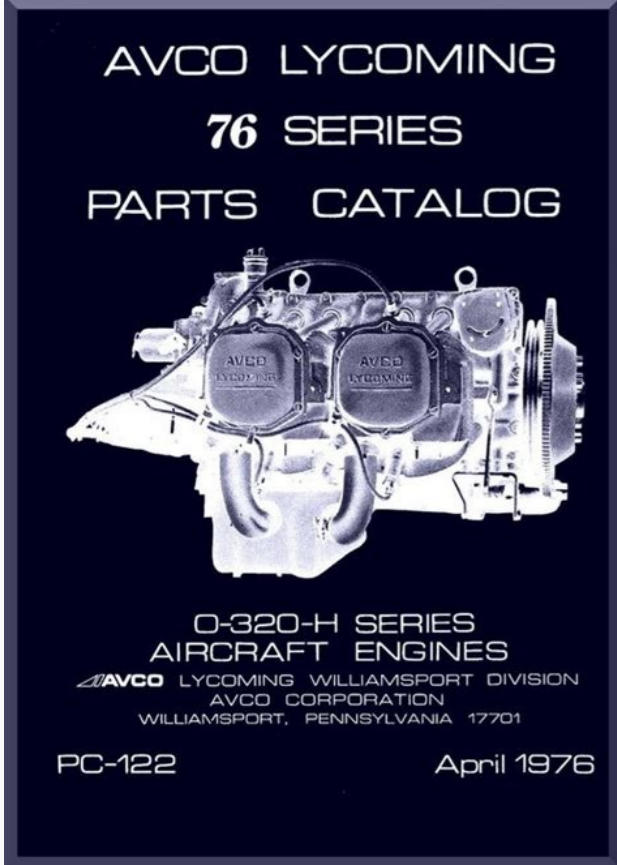
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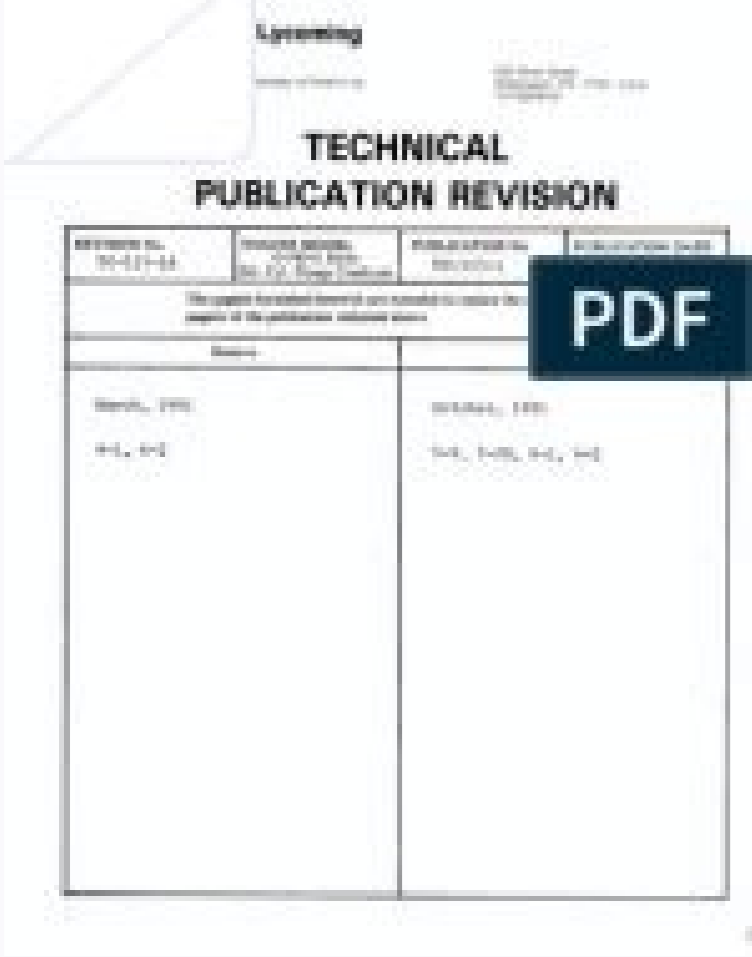
Lycoming o- 320 type certificate data sheet

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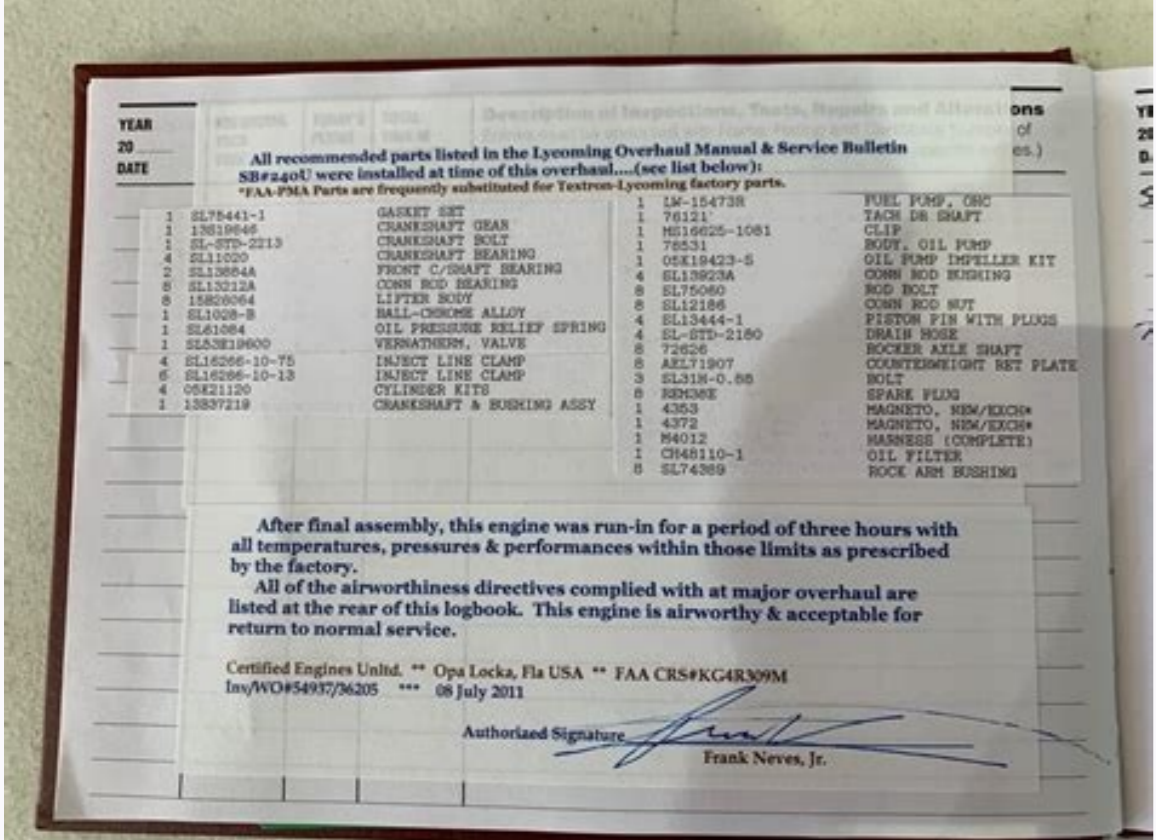
American aircraft engine O-320 A Lycoming O-320-D2A installed in a Symphony SA-160 Type Piston aero-engine National origin United States Manufacturer Lycoming Engines Major applications Cessna 172 Piper PA-28 Cherokee Piper PA-18-150 Super Cub Produced 1953-present The Lycoming O-320 is a large family of naturally aspirated, air-cooled, four-cylinder, direct-drive engines produced by Lycoming Engines. They are commonly used on light aircraft such as the Cessna 172 and Piper Cherokee. Different variants are rated for 150 or 160 horsepower (112 or 119 kilowatts). As implied by the engine's name, its cylinders are arranged in horizontally opposed configuration and a displacement of 320 cubic inches (5.24 L).[1] Design and development An O-320-H2AD cutaway to show internal parts of the engine. The O-320 family of engines includes the carbureted O-320, the fuel-injected IO-320, the inverted mount, fuel-injected AIO-320 and the aerobatic, fuel-injected AEIO-320 series. The LIO-320 is a "left-handed" version with the crankshaft rotating in the opposite direction for use on twin-engine aircraft to eliminate the critical engine.[2][3] The first O-320 (with no suffix) was FAA certified on 28 July 1953 to CAR 13 effective 5 March 1952; this same engine was later re-designated, without change, as the O-320-A1A.[2] The first IO-320 was certified on 10 April 1961, with the LIO-320 following on 23 June 1969 and the first aerobatic AEIO-320 on 12 April 1974. The LIO-320s were both certified on 28 August 1969.[2][3] The O-320 family of engines externally resembles the Lycoming O-235 and O-290 family from which they were derived.



The O-320 shares the same 3.875 in (98 mm) stroke as the smaller engines, but produces more power with the bore increased to 5.125 in (130 mm). The design uses hydraulic tappets and incorporates the provisions for a hydraulically controlled propeller installation as well. The controllable-pitch propeller models use a different crankshaft from those intended for fixed-pitch propellers.[4] The O-320 uses a conventional wet sump system for lubrication. The main bearings, connecting rods, camshaft bearings, tappets and pushrods are all pressure lubricated, while the piston pins, cylinder walls and gears are all lubricated by spray. The oil system is pressurized by an accessory-drive mounted oil pump. A remotely mounted oil cooler is used, connected to the engine by flexible hoses.[4] The 150 hp (112 kW) versions of the carbureted O-320, are approved for the use of 87 AKI automotive gasoline. Models with 9.0:1 compression ratio are not approved, such as the H2AD model. All other 160 hp (119 kW) O-320s are approved for 91 AKI. Airframe approval is also necessary to use automotive gasoline in any certified aircraft.[5] The factory retail price of the O-320 varies by model. In 2010 the retail price of an O-320-B1A purchased outright was USD\$47,076[6] Variants O-320 series O-320 (No suffix) later redesignated O-320-A1A 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Provisions for a controllable-pitch propeller and 25-degree spark advance.[2] O-320-A1B 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A1A but with straight riser in oil sump and -32 carburetor.[4] O-320-A2A 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A1A but with fixed-pitch propeller.[4] O-320-A2B 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A2A but with straight riser in oil sump and -32 carburetor.[4] O-320-A2C 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A2B but with retard breaker magnetos.[4] O-320-A2D 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A2D but with conical mounts.[4] O-320-A3A 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A1A but with 7/16" prop bolts.[4] O-320-A3B 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A3A but with straight riser in oil sump and -32 carburetor.[4] O-320-A3C 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1.



Same as A3B but with retard breaker magnetos.[4] O-320-B1A 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as A1A but with high compression pistons.[4] O-320-B1B 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as B1A but with straight riser in oil sump and -32 carburetor.[4] O-320-B2A 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as B1A but with fixed-pitch propeller provisions.[4] O-320-B2B 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as B2B but with retard breaker magnetos.[4] O-320-B2D 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 91/96 avgas, compression ratio 8.50:1. Same as B2D but with conical engine mounts and no propeller governor.[2] O-320-B2E 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 91/96 avgas, compression ratio 8.50:1. Same as B2B except the carburetor is in the same location as the O-320-D models.[2] O-320-B3A 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as B1A but with 7/16 inch propeller bolts.[4] O-320-B3B 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as B1A but with 7/16 inch propeller bolts, a straight riser in oil sump, and -32 carburetor.[4] O-320-B3C 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as B3B but with Type 1 dynafocal mounts.[4] O-320-B3D 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Low compression version converted through field conversion of B1B.[4] O-320-C2A 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Low compression version converted through field conversion of B2A.[4] O-320-C2B 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Low compression version converted through field conversion of B2B.[4] O-320-C2C 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Low compression version converted through field conversion of B3A.[4] O-320-C3B 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Low compression version converted through field conversion of B3B.[4] O-320-C3C 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Low compression version converted through field conversion of B3C.[4] O-320-D1A 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as B3B but with Type 1 dynafocal mounts.[4] O-320-D1B 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as D1A but with Slick instead of Bendix magnetos and a horizontal carburetor and induction housing.[2] This model was used in the Gulfstream American GA-7 Cougar twin. O-320-D1F 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 91/96 avgas, compression ratio 8.50:1. Same as E1F except with high compression pistons.[4] A brand new Lycoming O-320-D2A engine with baffles already mounted O-320-D2A 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1.



Same as D1A but with fixed-pitch propeller provisions and 3/8 inch attaching bolts.[4] Used in the Symphony SA-160. O-320-D2B 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as D2A but with retard breaker magnetos.[4] O-320-D2C 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 100/130 or 91/96 avgas, compression ratio 8.50:1. Same as D2A except -1200 series magnetos.[4] O-320-D2F 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 91/96 avgas, compression ratio 8.50:1. Same as D2A except with Slick instead of Bendix magnetos and 7/16 inch instead of 3/8 inch propeller flange bolts. [2] O-320-D2H 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 91/96 avgas, compression ratio 8.50:1. Same as the D2G except with a O-320-B sump and intake pipes and with provisions for AC type fuel pump.[2] O-320-D2J 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 91/96 avgas, compression ratio 8.50:1. Similar to the D2G but with two Slick impulse coupling magnetos and the propeller governor pad, fuel pump and governor pads on the accessory housing all not machined.[2] Used in the Cessna 172P. O-320-D3G 160 hp (119 kW) at 2700 rpm, Minimum fuel grade 91/96 avgas, compression ratio 8.50:1. Same as the D2G but with 3/8 inch propeller attaching bolts.[2] O-320-E1A 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as A3B but with Type 1 dynafocal mounts.[4] O-320-E1B 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E1A but with retard breaker magnetos.[4] O-320-E1C 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E1B.[4] O-320-E1F 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E1C but with propeller governor drive on the left front of the crankcase.[4] O-320-E1J 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as the E1F but with Slick magnetos.[2] O-320-E2A 150 hp (112 kW) at 2700 rpm, or 140 hp (104 kW) at 2450 rpm Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E1A but with fixed-pitch propeller, 3/8 inch attaching bolts and an alternate power rating of 140 hp (104 kW).[4] O-320-E2B 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E2A but with retard breaker magnetos.[4] O-320-E2C 150 hp (112 kW) at 2700 rpm, or 140 hp (104 kW) at 2450 rpm Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E2A but -1200 series mags and an alternate power rating of 140 hp (104 kW).[4] O-320-E2D 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Similar to E2A but with Slick magnetos and O-235 front.[4] Used in the Cessna 172 I to M models. O-320-E2F 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E1F but with fixed pitch prop provisions.[4] O-320-E2G 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E2D but with 84LN-20 and -21 magnetos.[4] O-320-E3D 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E2D but with 3/8 inch propeller flange bolts.[4] O-320-E3H 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 80/87 avgas, compression ratio 7.00:1. Same as E3D but with 3/8 inch propeller flange bolts.[4] O-320-E3I 150 hp (112 kW) at 2700 rpm, Minimum fuel grade 100L avgas, compression ratio 9.00:1.

