

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

E-229  
Revision 13  
AVCO Lycoming  
O-290, -A, -AP, -B (O-290-1),  
-C (O-290-3), -CP, -D (O-290-11),  
-D2, -D2A, -D2B, -D2C  
  
June 15, 1963

TYPE CERTIFICATE DATA SHEET NO. E-229

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. 229) and other approved data on file with the Federal Aviation Agency, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Manufacturer Lycoming Division  
AVCO Corporation  
Williamsport, Pennsylvania

Model	Lycoming	O-290	O-290-A, -AP	O-290-B	O-290-C, -CP
Type		4H0A Direct Drive	- - - -	- - - -	- - - -
Rating					
Max. continuous, hp., r.p.m., Sea level pressure altitude Takeoff, hp., r.p.m. , at full throttle		125-2450-S.L.	125-2600-S.L.	125-2600-S.L.	- -
Fuel (Minimum grade aviation gasoline)		73	- -	- -	- -
Bore and stroke, in.		4.875 x 3.875	- -	- -	- -
Displacement, cu. in.		289	- -	- -	- -
Compression ratio		6.25:1	6.5:1	- -	- -
Weight (dry), lbs.		244	251 (with SR4L-8 or N-8 magnetos); 245 (with N-20 or N-21 magnetos)	247	238
C.G. location (dry)					
Fwd. of mounting face, in.		7.0	—	7.0	- -
From front face of rear propeller mounting flange, in.		—	—	—	—
Off propeller shaft C.L., in.		.3 (Above)	—	.2	.1 (Below)
C.G. location (with all accessories)					
Fwd. of mounting face, in.		5.1	4.7	—	—
From front face of rear propeller mounting flange, in.		—	—	—	—
Off propeller shaft C.L., in.		.3 (Above)	.6 (Below)	—	—
Propeller shaft (see NOTE 4)					
Integral flanged hub		8-3/8 bolts			
		5-1/4 circle	- -	- -	- -
or SAE spline type No.		10	- -	- -	- -
Carburetion		Marvel MA-3	MA-3SPA	MA-3SPAA	MA-3SPA

"- - indicates "same as preceding model."  
"—" indicates "does not apply."

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Model	Lycoming	(cont'd)	O-290	O-290-A, -AP	O-290-B	O-290-C, -CP
Ignition, Dual			Scintilla SF4L-8 or SF4LN-8 magnetos	SF4L-8, SF4LN-8, -20 or -21	SF4L-8 or SF4LN-8	- -
Ignition timing, °BTC			25	20	- -	- -
Spark plugs			See NOTE 8	- -	- -	- -
Oil sump capacity, Qts.			8	- -	- -	- -
Usable oil sump capacity, Qts.			6	- -	- -	- -
NOTES			1,2,3,4,5,6,8	- -	- -	- -
Model	Lycoming		O-290-D	O-290-D2, -D2A	O-290-D2B	O-290-D2C
Type			4HOA	- -	- -	- -
			Direct Drive	- -	- -	- -
Rating						
Max. continuous, hp., r.p.m., Sea level pressure altitude Takeoff,			125-2600-S.L.	135-2600-S.L.	- -	- -
hp., r.p.m., at full throttle			130-2800 (5 min.)	140-2800 (5 min.)	- -	- -
Fuel (Minimum grade aviation gasoline)			80	80/87	- -	- -
Bore and stroke, in.			4.875 X 3.875	- -	- -	- -
Displacement, cu. in.			289	- -	- -	- -
Compression ratio			6.5:1	7.5:1	7.00:1	- -
Weight (dry), lbs.			230	233 (-D2) 236 (-D2A)	236	235
C.G. location (dry)						
Fwd. of mounting face, in.			—	—	—	—
From front face of rear propeller mounting flange, in.			15.1	- -	- -	—
Off propeller shaft C.L., in.			.7	- -	- -	—
			.1 (Right)	- -	- -	—
C.G. location (with all accessories)						
Fwd. of mounting face, in.			—	—	—	—
From front face of rear propeller mounting flange, in.			14.21	- -	—	14.21
Off propeller shaft C.L., in.			1.27 (Below) .06 (Right)	- -	—	1.27 (Below) .06 (Right)
Propeller shaft (see NOTE 4)						
Integral flanged hub or SAE spline type No.			Flange type SAE 2 —	- -	- -	- -
Carburetion			MA-3SPA	- -	- -	- -
Ignition, Dual			S4LN-20 (Right), S4LN-21 (Left)	- -	- -	S4LN-204 S4LN-200
Ignition timing, °BTC			25	18	25	25
Spark plugs			See NOTE 8	- -	- -	- -
Oil sump capacity, Qts.			8	- -	- -	- -
Usable oil sump capacity, Qts.			6	- -	- -	- -
NOTES			1,2,3,4,5,8	1,2,3,4,5,6,7,8	1,2,3,4,5,7,8	- -

"- - indicates "same as preceding model."

"—" indicates "does not apply."

## CERTIFICATION BASIS

<u>Regulation &amp; Amendments</u>	<u>Model</u>	<u>Date of Application</u>	Date Type Certificate No. 229 <u>Issued/Revised</u>
CAR 13 Effective August 1, 1941	O-290-A	March 18, 1942	July 27, 1942
	O-290	June 15, 1942	July 27, 1942
	O-290-C	November 23, 1942	January 22, 1943
	O-290-B	November 28, 1942	January 22, 1943
	O-290-AP, -CP	July 17, 1944	July 21, 1944
	O-290-D	July 22, 1949	December 13, 1949
As Amended by 13-1	O-290-D2	June 28, 1950	May 1, 1952
	O-290-A, -AP, -B, -C, -CP		Canceled Nov 2, 1950
CAR 13 Effective March 5, 1952	O-290-D2A	March 31, 1953	April 20, 1953
As Amended By 13-1 & 13-2	O-290-D2B	September 23, 1954	September 30, 1954
CAR 13 Effective June 15, 1956	O-290-D2A		Canceled July 5, 1956
As amended by 13-1	O-290-11	December 6, 1957	January 6, 1958
13-2 & 13-3	O-290-D2C	April 17, 1961	May 8, 1961

Production basis

Production Certificate No. 3

NOTE 1. Maximum permissible temperatures are as follows:

<u>Model</u>	Cylinder head (Spark plug washer <u>thermocouple</u> )	Cylinder head (Well- type <u>thermocouple</u> )	<u>Cylinder barrel</u>	<u>Oil Inlet</u>
O-290 only	550°F	525°F	300°F	200°F
O-290-A, -AP, -B, -C, - CP	525°F	500°F	325°F	220°F
O-290-D, -D2, -D2A, -D2B, -D2C	525°F	500°F	325°F	245°F

NOTE 2.

	<u>Minimum</u>	<u>Maximum</u>
Fuel pressure limits	0.5 p.s.i.	6.0 p.s.i.
Oil pressure limits (Normal operation)	60 p.s.i.	90 p.s.i.
(Idling 25 p.s.i.) (Starting and warm-up)		100 p.s.i.

NOTE 3.

Deleted. Accessories such as generators, starters, fuel and vacuum pumps, etc. previously listed in NOTE 3 are satisfactory for continued use with these engines. Accessories of these types are not integral engine accessories and therefore are not evaluated for approval during engine certification testing. The airworthiness of such accessories is substantiated during aircraft-installation system approvals. The suitability of the accessory to the engine mounting provisions as described in NOTE 4 of this data sheet must be determined when processing such approvals.

NOTE 4. The following accessory drive provisions are available.

Drive	Engine Model			*Direction of Rotation Facing Engine Pad	Speed X Crankshaft RPM	Maximum Torque (in. -lb.)		Maximum Overhang Moment (in. -lb.)
	O-290, -C, -CP	O-290- A, -AP	O-290-B			O-290-D, -D2, -D2a, -D2b, -D2C	Cont.	
Starter	Yes		Yes	C	1.000:1	—	3000	80
Starter		Yes		C	13.500:1	—	240	150
Starter				CC	13.556:1	—	450	150
Generator	Yes			CC	1.385:1	175	500	200
Generator		Yes		CC	1.500:1	30	65	175
Generator			Yes	C	1.250:1	175	500	200
Generator				C	1.910:1	60	120	175
Generator (Optional)				C	2.500:1	60	120	175
Tachometer	Yes		Yes	C	0.500:1	20	60	5
Tachometer		Yes		C	0.500:1	7	50	5
Fuel Pump	Yes			C	1.000:1	50	450	10
Fuel Pump		Yes		Plunger Operated	0.500:1	—	—	10
Vacuum Pump	Yes			C	1.333:1	50	450	25
Vacuum Pump		Yes		C	1.292:1	60	175	25
Vacuum Pump			Yes	C	1.000:1	50	450	25
Vacuum Pump				CC	1.300:1	70	450	25
Hydraulic Pump			Yes	C	1.333:1	50	450	25
Fuel Pump				C	1.000:1	25	450	25
Propeller Governor or Fuel Pump				C	.866:1	125	825	25
				C	.866:1	125	825	25

\*C - Clockwise, CC - Counter-Clockwise

NOTE 5. The above engines incorporate the following detailed differences:

- (a) Includes Model O-290-A engine, Serial No. 107-6, with ratings, temperature limits, compression ratio, carburetor, and ignition timing the same as for Model O-290.
- (b) Serial No. suffix "S" identifies engines incorporating No. 10 spline crankshaft. O-290-C engines, Nos. 568-6 to 597-6 inclusive, originally incorporated the 6 bolt propeller flange. Propellers having at least a 4-3/4 in. thick hub are required with these crankshafts.
- (c) Models O-290-AP and O-290-CP, similar respectively to Models O-290-A and O-290-C, incorporate provisions for absorbing the propeller thrust in both tractor and pusher type aircraft.
- (d) Military Models O-290-1, O-290-3 and O-290-11 are identical respectively to O-290-B, O-290-C and O-290-D. When they are installed in certificated aircraft, the corresponding commercial model designation and Type Certificate No. 229 should be added to the engine nameplate.
- (e) Model O-290-D similar to Model O-235-C1 except for O-290-A cylinder, piston and connecting rod assemblies, reinforced crankcase and crankshaft and is eligible for both tractor and pusher type installations.
- (f) Model O-290-D2 similar to Model O-290-D except crankcase, higher compression ratio, hydraulic tappets, camshaft, intake valves and associated parts.
- (g) Model O-290-D2A similar to Model O-290-D2 except has provisions for controllable propeller and propeller governor or alternate fuel pump.
- (h) Model O-290-C Serial No. 1446-6 has been modified in accordance with C.E. Wilson Drawing #2 to incorporate revised generator and magneto drive gears. With this modification, the engine is restricted to 125 hp. at 2600 r.p.m. for takeoff and maximum continuous.
- (i) Model O-290-D2B similar to O-290-D2 except for compression ratio, ignition timing and propeller governor provisions.
- (j) Model O-290-D2C similar to O-290-D2B except has retard breaker magnetos S4LN-204, -200.

NOTE 6. The approvals for the following models have expired. No engines of these models manufactured after the indicated date or with a higher Serial No. are eligible in certificated aircraft:

<u>Model</u>	<u>Serial No.</u>	<u>Date</u>
O-290	872-6	2-25-44
O-290-B	1448-6	7-10-45
O-290, -A, -AP, -C, -CP	2070-6	3-10-50
O-290-D2A	5720-21	10-15-53

NOTE 7. Model O-290-D2 is approved for horizontal mounted helicopter application at the following ratings:

Maximum continuous hp., r.p.m., sea level pressure altitude	135-2600-S.L.
Takeoff hp., r.p.m., full throttle	135-2600

NOTE 8. The following spark plugs are approved on these engines:

	<u>O-290, -A, -AP, -B, -C, -CP, -D</u>	<u>O-290-D2, -D2A, -D2B, -D2C</u>
AC	SR-83P, HSR-83P, S-86R, SR-87, A-88, S-88, SR-88, S88D, SR88D, HSR88	SR-83P, HSR-83P, S-86R, SR-87, A-88, S-88, SR-88, HSR88
Autolite	SH-2K, SH-2M, SH-15, SH15R, SH-20, SH-20A, 18A-1, PH26, PH260	SH-2K, SH-2M, SH15, SH15R, SH-20, SH-20A, PH26, PH260, SH200A
BG	706S, 706SR, SU-454, 919SR, RB485S, 706, 706R, RB955S, 919SR-5, SU-435	915SR, RB485S, 706S, 919SR5, RB955S
Champion	C26S, C27S, ED-41N, EM-41N, RC26S, RED39N, REM39N, R25S, RED37N, REM37N, RHD39N, RHM39N, RHD37N, RHM37N, A4-4, C26, C27, D41N, M41N, M42E, EM42E, REM40E, RHM38P, RHM40E	C27S, ED41N, EM41N, RC26S, RED39N, REM39N, R25S, RED37N, REM37N, RHD39N, RHM39N, RHD37N, RHM37N, C27, D41N, M41N, M42E, EM42E, REM405, RHM405, RHM38P, REM38P

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