

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E3IN
Revision 4
Rolls-Royce

RR C90-8F, -8FJ
RR C90-12F, -12FH, -12FJ,
-12FP
RR C90-14F, -14FH, -14FJ, -16F
RR O-200-A, O-200B, O-200-C

March 27, 2007

TYPE CERTIFICATE DATA SHEET NO. E3IN

Engines of models described herein conforming with this data sheet (which is part of type certificate no. E3IN) 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 provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate Holder Rolls-Royce Limited
Crewe, Cheshire,, England

	<u>RR C90-8F</u>	<u>RR C90-12F, -14F, -16F</u>	<u>RR O-200-A, -B, -C</u>
Model	4HOA	--	--
Type	4HOA	--	--
Rating, standard atmosphere			
Maximum continuous hp, rpm	90-3475	--	100-2750
at sea level pressure altitude			
Takeoff hp, 5 min, rpm, full throttle,	95-2625	--	100-2750
at sea level pressure altitude			
Fuel (minimum grade aviation gasoline)	80/87	--	--
Lubricating oil, ambient air temperature	Oil Grade		
Below 40°F	SAE 20	--	--
Above 40°F	SAE 40	--	--
Bore and stroke, in.	4.062 X 3.875	--	--
Displacement, cu. in.	201	--	--
Compression ratio	7:1	--	--
Weight (dry) lb.	184	188	190
C.G. location (with accessories)			
Fwd. of rear face of mounting lugs, in.	6.2	4.6	--
Below crankshaft center line, in.	1.5	1.3	1.2
Propeller shaft, SAE No.	1 Flange	--	--
Carburetion (see Note 4 for injectors)	Marvel Schebler MA-3SPA (CMC P/N 627367) or Bendix-Stromberg NA-S3A1 (CMC P/N 530625, 530726, 531126, 530846, 531157)		Marvel-Schebler MA-3SPA (CMC P/N 627143)
Ignition	2 Bendix-Scintilla S4RN-21 or -1227, or less.	2 Bendix/Scintilla S4LN-21 or -1227 or 1 ea. S4LN-200 and -204; Slick-Electro 447 magnetos	
Timing, °BTC	26 Top, 28 Bottom	--	28 Top, 28 Bottom
Spark plugs	See Note 6.	--	--
Oil sump capacity, qt.	5 or 6	--	--
NOTES	1 through 7	1, 2, 3, 4, 6, 7	1, 2, 3, 4, 6, 7

"- -" indicates "same as preceding model."

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Certification basis CAR 10 and British Civil Airworthiness Requirements Section C (BCAR Section C is equivalent to CAR part 13, effective June 15, 1956, as amended by 13-1 through 13-3, effective October 1, 1959).
Type Certificate No. E3IN issued April 2, 1963, amended October 1, 1964, and August 14, 1967,
Date of application for Type Certificate: May 18, 1962.

The aviation authority for the United Kingdom, the UK Civil Aviation Authority (CAA), originally type certificated this engine. The FAA validated this product under U.S. Type Certificate Number E3IN. Effective September 28, 2003, the European Aviation Safety Agency (EASA) began oversight of this product on behalf of the UK.

Import requirements: To be considered eligible for installation on U.S. registered aircraft, each new engine to be exported to the United States with UK CAA or EASA airworthiness approval shall have a Joint Aviation Authorities (JAA) or EASA Form 1, Authorized Release Certificate. The JAA or EASA Form 1 should state that the engine conforms to the type design approved under the U.S. Type Certificate E3IN, is in a condition for safe operation and has undergone a final operational check.

NOTE 1. Maximum permissible temperatures:

	<u>C90 Series</u>	<u>O-200 Series</u>
Cylinder head	525°F	525°F
Cylinder barrel	275°F	290°F
Oil inlet	225°F	225°F

NOTE 2. Carburetor fuel inlet pressure limits:
MA-3SPA (CMC P/N 627367 and 627143) for gravity or pump system, minimum 7.5 in. fuel head differential between carburetor fuel inlet fitting and float bowl chamber, maximum 6 psig.
NA-S3A1 (CMC P/N 530625, 530726 and 531126) for gravity system minimum 19 in. fuel head differential between carburetor fuel inlet fitting and float bowl chamber, maximum 4 psig.
NA-S3A1 (CMC P/N 530846 and 531157) for pump system, minimum 2 psig, maximum 4 psig.

	<u>C90 Series</u>	<u>O-200 Series</u>
Oil pressure limits:	30 to 40 psig	30 to 60 psig
		Minimum idling with hot oil 10 psig

NOTE 3. The following accessory drive or mounting provisions are available:

Accessory	Direction of Rotation	Speed Ratio to Crankshaft	Max. Torque (in.-lb.)		Maximum Overhang Moment (in.-lb.)
			Continuous	Static	
Tachometer	C	0.500:1	7	50	25
Generator	CC	2.035:1	60	600	100
Starter	C	35.7:1			
**Vacuum pump	CC	1.0:1	100	800	25
***Fuel pump (diaphragm)		0.500:1			

Accessories previously listed in Note 3 are satisfactory for continued use with C90 series engines.

* C - Clockwise viewing drive pad; CC - Counterclockwise.

** C90 - 16F and O-200 series engines only.

*** CMC Eq. 5809 incorporating CMC P/N 40585 pump approved as part of type design of the O-200 series engine, AC fuel pump, CMC P/N 631391, available as optional equipment on C90-16F.

NOTE 4. The C90-8F is identical to the C90-12F model except that the accessory section does not incorporate provisions for generator and starter drives.
The C90-14 models incorporate Lord type engine mounts which are not interchangeable with C90-12 models due to different machining of the engine mounting lugs on the engine crankcase.
The C90-16F is similar to the C90-12F except that vacuum pump drive provisions have been added.
The Model O-200-B is similar to the O-200-A except for special crankshaft and crankcase providing for thrust application toward the engine only.
The Model O-200-C is similar to the O-200-A except for incorporation of provisions to supply oil pressure to a controllable pitch propeller through the crankshaft from an external boss on the crankcase.

Those C90 series models listed in the heading of this data sheet, suffixed by letters H, J, and P, differ from the basic model designation as follows:

"H" denotes a special SAE No. 1 flange crankshaft and special crankcase for the installation of a hydraulically operated controllable pitch propeller requiring oil supply through the crankshaft.

"J" denotes incorporation of Model B-46 Ex-Cell-O fuel injector, P/N 530499, or American Bosch Model PGC-4A-95A2, P/N 534505, at a weight increase of 4 lbs. over the corresponding carburetor equipped engine.

"P" denotes pusher installation incorporating special crankshaft and thrust bearing.
Oil sump gauge rods will be marked as per installer's requirements.

NOTE 5. Bendix-Stromberg NA-S3A1 carburetor, P/N 530726, eligible only on Piper PA-11 airplanes equipped with Piper mufflers.

NOTE 6. The following spark plugs are approved for use on engine models as indicated:

C90-8F, -12F, -14F, -16F

AC	HS483IR, SR83IR, HSR83P, A88, SR83P, HS88, S88, S88D, HSR88, SR88, SR88D
Auto Lite	18A1, BR4, BR4S, BR4SB, SH15, H15, SH15R, SH20A, SH150, SH200A
BG	RB485S, 706, 706R, 706S, 706SR, 919SR5, RB955S
Champion	C26, C26S, C27, C27S, REM38P, REM38W, RHM38P, RHM38W, REM40E, RHM40E, ED41N, D41N, EM41N, M41N, EM42E, M42E
Red Seal	SA190, SE190, SJ190, SE230, SJ230

O-200-A, -B, -C

AC	HSR83IR, SR83IR, HSR83P, SR83P, A88, HS88, S88, S88D, HSR88, SR88, SR88D
Auto Lite	18A1, SH15, H15, SH15R, SH20A, SH150, SH200A
BG	RB485S, 706, 706S, 919SR5, RB955S
Champion	C27, C27S, REM38P, REM38W, RHM38P, RHM38W, REM40E, RHM40E, ED41N, D41N, EM41N, M41N, EM42E, M42E
Red Seal	SA190, SE190, SJ190, SE230, SJ230

NOTE 7. The engines listed herein are directly interchangeable with the equivalent models manufactured by Continental Motors Corporation.

NOTE 8. Each of the documents listed below must state that it is approved by the European Aviation Safety Agency (EASA) or, for approvals made before September 28, 2003 by the United Kingdom Civil Aviation Authority. Any such documents including those approved under a delegated authority, are accepted by the FAA and are considered FAA approved.

- Service bulletins,
- Structural repair manuals,
- Vendor manuals,
- Aircraft flight manuals, and
- Overhaul and maintenance manuals.
- Technical Variances

These approvals pertain to the type design only.

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