DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

NOTE 20. This type certificate is cancelled effective June 6, 2011 and is not valid for aircraft manufactured after this date. This cancellation also invalidates, and precludes issuance of, any U.S. Certificates of Airworthiness.

Cancelled

TYPE CERTIFICATE DATA SHEET NO. E19NE

Engines of models described herein conforming with this data sheet (which is part of Type Certificate No. E19NE) and other approved data on file with the Federal Aviation Administration (FAA) meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations (FARs), 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 Leavesden, England
Model	Mk. 530
Type	Turboshaft with free power turbine. 4 stage axial flow LP compressor driven by single stage turbine. Single stage centrifugal HP compressor driven by single stage turbine. Two stage power turbine driving double helical epicyclic main reduction gearbox, ratio 4.5 to 1. Annular reverse flow combustion chamber.
Ratings (see Note 7)	
Maximum continuous at sea level static, output SHP	1150
Takeoff (5 mins.) at sea level static, output SHP	1180
30 minute helicopter rating at sea level static, output SHP	1180
2-1/2 minute helicopter rating at sea level static, output SHP	1257
Fuel (see Note 8)	
Fuel control - Hamilton Standard Digital Electronic fuel control system comprising hydromechanical fuel control	JFC 118-22
Engine electronic control (a/c mounted)	EEC 118-22
Rotor overspeed protection unit (a/c mounted)	789389-1 or 789389-2 (alternatives)
Oil	
Tank capacity - US pints	9.6
Usable oil - US pints	6.6
Type (see Note 9):	Aeroshell turbine oil 555 Royco turbine oil 555 Esso/Exxon turbo oil 25 Esso/Exxon turbo oil 2380
Ignition System	
Igniter unit, Bendix type	10-614675-1
Two igniter plugs, AC Delco type	YB 63-1
Principal Dimensions - (inches)	
Length	43.3
Height	23.5
Width	22.6

Weight - (lbs.) (dry, includes essential engine-mounted accessories but excludes aircraft mounted Engine Electronic Control, Torquemeter Electronic Unit and Rotor Overspeed Protection Unit - See Note 10.)	422.2 (max)
Center of Gravity Location - (Inches) (aft of engine gearbox/front mounting face)	20.6
Certification Basis	FAR 21.29 and FAR 33 effective February 1, 1965, as amended by Amendments 33-1 through 33-9, inclusive. Pursuant to FAR 21.29(a)(1)(ii) the type certificate was issued in validation of the British Civil Aviation Authority (CAA) certification to British Civil Airworthiness Requirements, BCAR Section C Issue 13, dated August 28, 1981, which were found to provide a level of safety equivalent to the above FAR 33 regulations.
Import Requirements	Each individually imported engine must be accompanied by a Rolls-Royce Limited/CAA approved "Inspection and Test Certificate" signed by a person authorized by the CAA and containing the following statement: "The engine covered by this certificate conforms to Type Certificate E19NE and is in condition for safe operation and has been subjected by the manufacturer to a final operational check."

Note 1. Gas Generator Speed Limitations - (rpm)	
2-1/2 minute rating	37,000
30-minute rating	36,180
Takeoff (5 mins.) rating	36,180
Maximum continuous rating	35,850
Transient (20 sec.)	37,144

Note 2. Output Shaft Speed Limitations - (rpm)	Minimum	Maximum
2-1/2 minute rating	5720	6300
30-minute rating	5720	6306
Takeoff (5 mins.) rating	5720	6306
Maximum continuous rating	5726	6472
Transient (20 seconds)	—	6800
Maximum for autorotation (no load)	—	6472

Note 3. Output Shaft Torque Limitations (lb.-ft.)	
2-1/2 minute rating	1154
30-minute rating	1126
Takeoff (5 mins.) rating	1126
Maximum continuous rating	1057
Transient (20 secs.)	1500

Note 4. Temperature Limitations (°C)	
Power Turbine Inlet Temperature (trimmed) (measured at stage 1 power turbine nozzle)	
2-1/2 minute rating	708
30-minute rating	686
Takeoff (5 mins.) rating	686
Maximum continuous rating	680
Maximum idling	550
Momentary maximum during starts	720

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Fuel Temperature
(measured at engine inlet) - maximum 57

Oil Temperature
(measured at oil cooler outlet) - maximum 135

Note 5. Fuel and Oil Pressure Limitations

Fuel - (psi) minimum (measured at engine inlet) 5 above atmospheric pressure with a fuel vapor/liquid ratio of zero

- (psia) minimum under abnormal (inoperative boost pump) conditions Equivalent to a fuel vapor-liquid ratio not greater than 0.45

Oil - (psid) (measured at oil filter outlet)*
Normal (P_2 +
9) Minimum to complete flight (P_2 +
5) Minimum at ground idle (P_2 +
5)

*differential oil pressure related to P_2 (LP compressor delivery) pressure

Note 6. Bleed Air and Accessory Drive Limitations

Maximum air bleed for aircraft services is 2.6% of no-bleed mass flow over whole range of LP system RPM subject to limiting power turbine inlet temperature not being exceeded.

A separate air bleed is provided via an engine mounted valve for aircraft intake anti-icing use. This supplies approximately 0.4% of no-bleed flow subject to usage limitations as detailed in Operating Instructions manual.

Accessory Drive Provisions

Drive	Type	Rotation*	Speed**	Torque (lb.-in.) Cont.	Torque (lb.-in.) Overload	Overhang (In. Lb.)
Starter -as starter pad	RS 623	C	0.247	243	729	142
Starter - as generator pad	RS 623	C	0.247	168	336	142
Spare drive	RS 623	CC	0.141	84	774	28

*C = Clockwise, and CC = Counter Clockwise; facing pad
**Speed is related to HP compressor system.

Note 7. Engine ratings are based on calibrated test stand performance under the following conditions:
Nominal output shaft speed of 6164 rpm.
Static sea level standard conditions of 59°F and 29.92 in. Hg.
Air Intake - front mounting shroud WD 793-106/107, intake flare WD 793-67 debris guard WD 793-78 or approved alternative
Exhaust Unit - WD 532-112 or approved alternative.
All optional air bleeds closed.
Aircraft service accessory drives unloaded.
The following values equate to the ratings at 86°F but with other conditions as stated above.
Maximum continuous 1102 shp; takeoff (5 mins) 1132 shp; 30 minute helicopter rating 1132 shp; 2-1/2 min helicopter rating 1203 shp.
Additional performance parameters are contained in technical specification TSC 230.

Note 8. Approved fuels and fuel additives are listed in RR Operating Instructions Manual - see note 13.

Note 9. Alternate brand oils to those listed are permitted when authorized by CAA approved RR Service Bulletin.
Oils reclaimed from the above approved brands to RR endorsed procedures may also be used.

Note 10. The engine approval includes the following airframe-mounted items of the fuel control system and torque measuring system which are listed in the RR engine Drawing Introduction Sheet (DIS) No. 16; Engine Electronic Control, Rotor Overspeed Protection Unit, and Torquemeter Electronic Unit which weigh 4.2 lb., 4.2 lb., and 3.9 lb. respectively.

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Note 11. The installation must be such that:
Ingestion of birds is prevented.
Ingestion of hail greater than one inch diameter is prevented.
Windmilling does not cause the HP rotor system to rotate.

Norte 12. Life-limited parts and accountability methods are identified in Rolls-Royce GEM Engine Service Bulletin No. 72-1.

Note 13. Gem series manuals approved under BCAR requirements accepted as equivalent to FAR 33.5 requirements are as follows:

Installation Instructions	Gem Mk. 530 Installation Manual No. IM11.
Operating Instructions	Gem Mk. 530 Operating Instructions, Publication ref. 1917.
Maintenance (installed)	Gem Mk. 530 Engine Maintenance Manual
Overhaul and Maintenance (not installed)	Gem Mk. 530 Engine Manual
Performance	Gem Mk. 530 Technical Specification No. TSC 230 and TP 84.

Note 14. Overhaul of engines is not authorized unless the Overhaul Manual is available; otherwise, rebuilt engines utilizing new engine tolerances may be provided by the manufacturer.

Note 15. The Gem Mk 530 engine is restricted to twin-engined rotorcraft applications.

Note 16. Engine Electronic Control software meets "critical" standard of RTCA DC-178/Eurocae ED12.

Note 17. Lighting protection requirements and electromagnetic radiation interference emitted by the engine electronic control system including cables are specified in the Installation Instructions.

Note 18. The electronic control must receive electrical power from two separate and independent buses, either one of which is capable of supplying the full electrical needs of the control, or be automatically switched to an independent secondary bus in the event of a failure of the primary bus.

Note 19. The effects of an inoperative electronic control on aircraft operational characteristics must be evaluated prior to installation approval.

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