DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E16EU
Rev. 2
ROLLS-ROYCE (1971)
BRISTOL
M.45H
Mk.501
March 31, 2011

NOTE 12. This type certificate is cancelled effective March 31, 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.

TYPE CERTIFICATE DATA SHEET NO. E16EU

Engines of models described herein conforming with this data sheet (which is part of Type Certificate No. E16EU), 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 F.A.A. 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 (1971) LIMITED
Bristol Engine Division
P.O. Box 3, Filton, Bristol
ENGLAND

Model M.45H Mk.501
Type Turbofan 2 spool short by-pass. Fan and 5 stage I.P. Compressor driven by a 3 Stage Turbine and a 7 Stage H.P. Compressor driven by a single Stage Turbine. An annular combustion system incorporating vaporizers.
Rating (see NOTE 4) Static thrust at sea level, lb.
Take-off (5 min.) 7260
Maximum Continuous 7090
Fuel (see NOTE 8)
Fuel system (including acceleration control, fuel pumps and steady state control Dowty Type 1140 Mk.1
L.P. Governor Dowty Type 1144 Mk.1
Pressurizing & check valve Dowty Type 1145 Mk.1
Oil Total oil capacity (US pints) 18
Usable oil (US pints) 9.6
Type Shell ASTO 390
Esso ETO 2380 Shell ASTO 500
Principal Dimensions, ins.
Mobil Jet II Shell ASTO 555
Castrol 580
Length (including nose bullet to tail bullet) 110 (2799 mm)
Diameter (at by-pass) 41.8 (1060 mm)
Overall length (intake fairing to tail bullet) 122 (3103 mm)
Weight (dry) lb.
Basic engine, including fuel and oil system, anti-icing 1560

PAGE	1	2	3	4
REV.	1	1	1	1

LEGEND: "- -" INDICATES "SAME AS PRECEDING MODEL"
"---" NOT APPLICABLE
NOTICE: ALL PAGES ARE REFORMATTED. SIGNIFICANT CHANGES, IF ANY ARE BLACK-LINED IN THE LEFT MARGIN.

CANCELLED

system, igniter plugs, accessory drive gearbox, blow-off valves, hot propelling nozzle, and fuel heater.	
Installation items supplied by R.R. (1971) including electrical harness, engine mounting attachment fittings, firewall and supports, firewire (compressor section), tacho generator, transmitters, slinging attachments. Vibration transducers, starter flameshields and by-pass ducts. Powerplant items supplied by RR to complete power unit assembly.	245
Nacelle (including accessory cowls) top fixed panel, rear cowl) and nacelle associated equipment (including constant speed drive, alternator, hydraulic pump, pipes, cooling and ventilation).	395

Centre of Gravity, in.

(For total weight of 2200 lb.)	
Forward of rear mounting trunnion center line	18
Below engine horizontal center line.	0.25

Ignition (High energy system) Two igniters Smiths SB8113
Igniter Unit Rotax C 146/TS/3

NOTES. (1 through 11)

Certification Basis: FAR 21.29 and FAR 33 effective February 1, 1965 as amended by amendments 33-1 through 33-4.

Type Certificate No. E16EU, issued May 9, 1975.

Effective date of application for type certificate: April 30, 1972.

Pursuant to FAR 21.29(a)(1)(ii), Type Certificate E16EU was issued in validation of the Civil Aviation Authority's certification of compliance with BCAR standards, which were found to provide a level of safety equivalent to the above "Certification Basis," as follows:

BCAR Section C, Issue 6, dated June 15, 1966 plus Blue Papers: 415, 435, 436, 468, 474, 476, 480, 481, 482, 499, 506, 544, 551 (Para. 3.2.2 only) and 554.

Import Requirements Each individually imported engine must be accompanied by an R.R. (1971) Ltd./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 and is in condition for safe operation; and has been subjected by the manufacturer to a final operational check."

CANCELLED

NOTE 1: Maximum permissible temperature are as follows (°C)

Uncompensated Jet pipe Temperature:

Take-off (5 min. limit) 577 to 614 *

Maximum Continuous 559 to 608 *

Starting (5 sec. limit)

- Oil temperature at pressure pump inlet -5°C and above 477
- Oil temperature at pressure pump inlet below -5°C 525

*Limit depends on ambient conditions. See RR Operating Instructions TP.176.

Take-off (5 min. limit) 601

Maximum Continuous - Below 160 KIAS :

- anti-icing auto 595
- anti-icing on 600
- Above 160 KIAS :
- anti-icing auto 580
- anti-icing on 585

Starting (5 sec. limit)

- Oil temperature at pressure pump inlet -5°C and above 500
- Oil temperature at pressure inlet below -5°C 565

**Defined by RR Mod.M45-0047. See RR Operating Instructions TP.176 for aircraft inst.modification standard.

- Oil inlet (unrestricted time) 130
- Oil inlet (10 sec.) 160
- Fuel heater outlet 65

NOTE 2: Fuel and Oil Pressure Limits:

Fuel Pressure	Minimum (measured at inlet to L.P. fuel filter)	10 p.s.i. above true fuel vapor pressure or 3 p.s.i. (gauge) whichever is greater with a
	Maximum (measured at inlet to L.P. fuel filter)	50 p.s.i.g.
Oil Pressure	Normal	30 - 50 p.s.i.g. at 95% r.p.m. and oil temperature of 60°C and above).
	Minimum to complete flight	7.5 p.s.i.g. (at max.oil temp.)
	Maximum	50 p.s.i.g. (at 100% r.p.m.)

NOTE 3. The following accessory drive provisions are incorporated:

Drive	Rotations	Speed Ratio to Turbine shaft			Torque (in.lb.)	Overhang (in.lb.)
			Continuous	Static		
Starter	AC	.632	590	4320	21	
Constant Speed Drive	AC	.423	384	3550	396	
Hydraulic Pump	AC	.387			200	2292 33
L.P. Tachometer	AC	.420	7.5	45	1	
H.P. Tachometer	AC	.234	7.5	45	1	

*Clockwise or anti-clockwise looking on the drive face of the accessory

NOTE 4. The ratings are based on string test stand operation under the following conditions:

International standard atmospheric conditions at sea level.

All optional air bleeds closed.

Aircraft service accessory drives unleashed.

Test bed venturi intake to R.R. (1971) Drg.HL. 112951.

Hot and cold nozzles as defined in P.I. 81837.

Jet pipe temperature measured by thermocouple harness as defined in P.I.S.837.

NOTE 5. M45H models have the following applications:

Mark 501 Basic Model for VFW Fokker 614 aircraft.

NOTE 6. (a) Maximum permissible engine operating rotor speeds are as follows:

N1 N2

CANCELLED

Take-off, rpm (5 min.limit) 10150 (101.4%) 17890: (99.7%)
Maximum continuous rpm. 10050 (100.4%) 17660: (98.4%)
Transient overspeed, rpm. (20 sec. limit) 10190 (101.8%) 17960: (100.1%)
(b) Ground idle/flight idle, minimum 10588 (59.0%)

NOTE 7. Air bleed extraction limitations:

Range of R.P.M. at which air bleed may be used. Unrestricted
Maximum air delivery for aircraft services and engine de-icing (% of no bleed mass flow) 5%

NOTE 8. The following fuels may be used for this engine:

Aviation Kerosene Specifications		Aviation Wide-cut Specifications
British	D.Eng.R.D.2494, D.Eng.R.D.2453	D.Eng.R.D. 2486
Canadian	3-GP-23	3-GP-22
American	ASTM D 1655 Jet A or A-1	ASTM D 1655 Jet B
1ATA	1973 Kerosene Type	Wide-Cut Type

NOTE 9. The only optional additives which may be used in approved fuels are as follows:

1. Anti-static additive Shell ASA 3 in concentrations not exceeding 1.0 mg. per liter. (378.5 mg, or 0.013 oz., per 100 U.S. Gals.)
2. Fuel System Icing Inhibitor (F.S.I.I.) to specification D.Eng.R.D. 2451 or MIL-I-27686E in concentrations not exceeding 0.15% by volume.
3. Anti-corrosion additive Hitec E.515 in concentrations not exceeding 14.3 mg per liter. (5.4 grams, or 0.191 oz., per 100 U.S. Gals.)

NOTE 10. Life limited components are listed in Chapter 5 of the M45H Mk.501 Engine Maintenance Manual, together with their approved lives.

NOTE 11. M45H Series Manuals approved under BCAR accepted as equivalent to FAR 33.5 are:

1. Engine Flight Operating Instructions. Reference TP.176/BED.
2. M45H-501 Engine & Powerplant Maintenance Manual. Reference TP.182/BED.
3. M45H-501 Engine Illustrated Parts Catalog.

M45H engines not eligible for import into U.S. under FAR 21.29 until CAA approved Installation and Overhaul Manuals are provided by Rolls Royce.

---END---

CANCELLED