European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

Number: IM.E.092
Issue: 01
Date: 15 May 2013
Type: Air Repair, Inc.
R-755 series engines

Models
R-755A1
R-755A2
R-755A2M
R-755A2M1
R-755B1
R-755B2
R-755B2M
R-755E

List of effective Pages:

Page	1	2	3	4	5	6												
Issue	01	01	01	01	01	01												

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I - General

1. Type / Models: R-755 / R-755A1, R-755A2, R-755A2M, R-755A2M1, R-755B1, R-755B2, R-755B2M, R-755E

2. Type Certificate Holder:

Air Repair, Inc.
920 Airport Service Road
Cleveland, Mississippi 38732
USA

Note: Air Repair, Inc. assumed ownership of this type certificate from Jacobs Service Company, 4305 Saturn Way, Chandler, Arizona 85334 on January 2, 2002.

3. Manufacturer: Jacobs Service Company
4305 Saturn Way
Chandler, Arizona 85334
USA

4. EASA Certification Application Date:

24 August, 2012

5. EASA Certification Date:

15 May, 2013

II - Certification Basis

1. FAA Certification Basis – see FAA TCDS E-237

2. EASA Certification Basis

2.1. Airworthiness Standards:

R-755A1, A2, E	CAR 13 eff. 01 Aug. 1941
R-755B1, B2	CAR 13 incl. Amdt. 13-1 and 13-2 eff. 28 Jan. 1952
R-755A2M, A2M1, B2M	CAR 13 incl. Amdt. 13-1, 13-2, and 13-3 eff. 15 June 1956

2.2. Special Conditions (SC): none

2.3. Equivalent Safety Findings (ESF): none

2.4. Deviations: none

2.5. Environmental Standards: none (not required for piston engines)

III - Technical Characteristics

1. Type Design Definition:

As defined by R-755 parts catalogue.

2. Description:

The R-755 engine is a carbureted, seven cylinder four stroke, spark-ignited, air-cooled, radial engine. The R-755E engine model incorporates propeller reduction gearing and a crankshaft with 3.5 order torsional vibration dampers.

Displacement: 12.4 dm^3 (757 cu. in.)
Bore x stroke: 133.35 mm x 127 mm (5.25 in. x 5.00 in.)
Compression ratio: 6 : 1 (all except R-755E)
6.5 : 1 (R-755E)
Gear ratio: 0.649:1 (R-755E)

3. Equipment:

Ignition: Combination Scintilla VMN7-DF5 magneto and Scintilla WL7A battery ignition unit (for R-755A1, R-755A2, R-755B1, R-755B2, R-755E)
Dual Scintilla VMN7-DF5 magnetos (for R-755A2M, R-755A2M1, R-755 B2M)
Spark Plugs: AC: S-86R, SR-83P, HSR-83P
Autolite: SH-2K, SH-2M, SH-20, SH-20A, 18A-1
BG: RB485S
Champion: C27, C27S, D4IN, ED4IN, EM4IN, M4IN, RC26S, RED39N, REM39N, REM40E, RHD39N, RHM39N, RHM40E, M42E, EM42E, REM39P, RHM38P.

4. Dimensions:

Model	all			
Overall Length	1003 mm (39.5 in)			
Overall Diameter	1118 mm (44.0 in)			

5. Dry Weight:

Model	R-755A1, B1	R-755A2, B2	R-755A2M, A2M1, B2M	R-755E
Weight	229.1 kg (505 lbs)	231.8 kg (511 lbs)	228.6 kg (504 lbs)	272.2 kg (600 lbs)

6. Ratings:

Rating		R-755A1, R-755A2, R-755A2M, R-755A2M1	R-755B1, R-755B2, R-755B2M	R-755E
Power, kW (HP)	Take-off, 5 min., full throttle at sea level pressure altitude	223.7 (300) at 2200 RPM	205 (275) at 2200 RPM	261 (350) at 2500 RPM
	Max. Continuous at sea level pressure altitude	223.7 (300) at 2200 RPM	205 (275) at 2200 RPM	261 (350) at 2500 RPM

Note: The performance values specified above correspond to minimum values defined under the conditions of ICAO or ARDC standard atmosphere.

7. Control System

The R-755 series engines are equipped with a carburetor and a dual ignition system.

8. Fluids (Fuel/Oil/Additives):

Fuel: see Section 3 of the Operators Manual

Oil: see Section 3 of the Operators Manual

9. Aircraft Accessory Drives:

Designation	Rotation direction	Speed ratio to crankshaft	Max. Torque Nm (in. lbs) Continuous	Static	Max. Overhang moment Nm (in. lbs)
Tachometer *	CW	0.5:1	-	-	-
Starter	CCW	1.5:1	-	621.42 (5500)	16.95 (150)
Fuel Pump (rear crankshaft)	CW	1:1	2.26 (20)	16.95 (150)	0.68 (6)
Generator, gear driven	CCW	1.4:1	5.65 (50)	33.90 (300)	12.43 (110)
Vacuum Pump *	CCW	1:1 or 0.875:1	3.39 (30)	22.60 (200)	0.90 (8)
Propeller Governor *	CCW	1:1	3.39 (30)	22.60 (200)	1.47 (13)
Hydraulic Pump *	CCW	1:1 or 0.875	3.39 (30)	22.60 (200)	0.68 (6)
Fuel Pump *	CCW	1:1	3.39 (30)	22.60 (200)	0.34 (3)
Prop Governor (R-755A2M1 model only)	CW	1:1	5.65 (50)	22.60 (200)	1.47 (13)

Notes : - CW - clockwise; CCW – counter clockwise (viewing engine drive flange)
* Accessories marked with an asterisk are mounted on accessory drive unit. The total continuous torque taken off all the drives on the accessory drive unit should not exceed 7.91 Nm (70 inch-pounds).

IV - Operational Limitations

1. Temperature limits:

Cylinder head: 260 °C (500 °F) (all except R-755E)
238 °C (460 °F) (R-755E)
Cylinder barrel: 149 °C (300°F)

Oil inlet: 93 °C (200 °F) (all except R-755E)
88 °C (190 °F) (R-755E)

2. Pressure Limits:

2.1 Fuel Pressure:

Inlet to carburetor, minimum: +17.2 kPa (+2.5 psig) (pressure feed)
+6.9 kPa (+1 psig) (gravity feed with carburetor setting revised for corrected float level or different size float needle and seat)
maximum: +27.6 kPa (+4 psig)

2.2 Oil Pressure Limits:

Maximum:	621 kPa (90 psig)
Minimum in operation:	414 kPa (60 psig)
Minimum at idle:	172 kPa (25 psig)

V - Operational and Service Instructions

Air Repair Inc. Jacobs Aircraft Engine R-755 Models Operator Manual (includes Installation and Maintenance Instructions)

Air Repair Inc. Jacobs Aircraft Engine R-755 Models Parts Catalogue

Air Repair Inc. Jacobs Aircraft Engine R-755 Models Overhaul Manual

VI – Notes

Note 1: Models R-755A1 and A2 eligible with aluminum rear and front crankcases and main bearing plate replacing the magnesium parts with possible weight increase of 5 kg (11 lbs).

Note 2: Models R-755A2, otherwise similar to Model R-755A1, has provision for hydraulically operated constant speed or two position propellers.

Model R-755A2M similar to R-755A2 except for dual magneto ignition system.

Model R-755A2M1 similar to R-755A2M except has provisions for propeller governor drive and propeller governor oil transfer rings in nose case.

Model R-755B1 and B2 respectively, similar to R-755A1 and A2 except for crankcase, cylinders and oil sump strainer.

Model R-755B2M similar to R-755B2 except for dual magneto ignition system.

Model R-755E incorporates the following redesigned and new features not incorporated in the R-755A models: Heavier cylinder heads, propeller reduction gearing, silver master rod bearing, new design crankcase with 3-1/2 order torsional vibration dampers, and new ratings.

Note 3: The following accessories are satisfactory for continued use with the R-755 engines models:

Governor: Hamilton Standard hydraulic propeller governor model 1A4

Hydraulic pump: Pesco model 320F
Fuel pump: Pesco models M-400, B-400BLY (4 stud pad) or Romec model RD-4140
Pesco type R-400-BLH or Romec type C-16 (3 stud pad)
Vacuum pump: Pesco B-2A (Model 194-C or 194-B) or Romec Type B-2A (Model RD2112)
Generator: Eclipse type D (25 amp, 12 volt) and control, Eclipse type LV-180 (15 amp) and control, Bosch type GEG (6 amp) and control, Leece-Neville (25 amp, 24 volt) and control
Alternator: JASCO Model 7555 (50 Amp., 24 Volt) and control

Starter: Eclipse Series E-80, Type 397.

These accessories 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 III 9. must be determined when processing such approvals.
