UK CIVIL AVIATION AUTHORITY
PROPELLER TYPE CERTIFICATE DATA SHEET NO. 116

Issue 7

4 February 2003

1. CERTIFICATION

Propellers of types detailed below are approved for use on civil aircraft classified in the Transport Category (Passenger) listed in item 4 of this data sheet when they are installed, operated and maintained in accordance with the approved manufacturer's manual and other approved instructions.

2. CONSTRUCTOR

Dowty Propellers
Anson Business Park
Cheltenham Road East
GLOUCESTER
GL2 9QN

3. TYPE NUMBER

(c) R391/6-132-F/3
(c) R391/6-132-F/10

4. APPROVED INSTALLATION

4.1 Installations

Propeller Model	Aircraft	Engine
(c)R391/6-132-F/3	Lockheed 382J Max. T.O. weight 79379 Kg 175,000 lb	Allison AE 2100D3 Max. take-off power 4705 SHP Max take-off torque 1732 lbft at 1020.7 propeller rpm See Note 8.6
(c)R391/6-132-F/10	Alenia Aerospazio C-27J Spartan Max T O weight 31,800 kg 70,107 lb	Rolls-Royce AE2100D2 Max. take-off power 4705 SHP Max take-off torque 1732 lbft at 1020.7 propeller rpm See Note 8.6

5. CERTIFICATION BASIS

5.1 (c) R391/6-132-F/3

JAR-P Change 7 and special requirements of CAA letter of 12 April 1991 (9/216/1661/CAA11/PDG/1)

5.2 (c) R391/6-132-F/10

JAR-P Change 7 including Orange Paper P/96/1, effective 8/8/96 and special requirements of CAA letter of 14 July 1999 (ref 9/80/Dowty/C27/C01/1-A)

6. PROPELLER PARTICULARS

Unless otherwise stated, the particulars apply to both (c)R391/6-132-F/3 and (c) R391/6-132-F/10 propeller types.

6.1 Build Standard

(c) R391/6-132-F/3
Specified in List of Parts 697039001-015 or later approved issues.

(c) R391/6-132-F/10
Specified in List of Parts 697091001-000 or later approved issues.

6.2. Description

Variable pitch, constant speeding, feathering, reversing, using hydraulic control and counterweights. Beta control provides manual pitch selection for aircraft braking and ground manoeuvring. Fully integrated, full authority, engine/propeller electronic control system, provided by engine manufacturer. The electronic control software meets the Level 'A' (critical) standard of RTCADO-178B.

6.3 Number and Description of Blades

Six blades of composite glass and carbon reinforced plastic construction, polyurethane coated and fitted with nickel leading edge sheath for erosion protection with electric de-icing overshoes.

6.4 Diameter

162 inches (4.115 metres).

6.5 Rotation

Rotation is right hand tractor (clockwise when viewed from rear)

6.6 Engine Shaft Mounting

Special flange with 15 bolts and 3 dowels, all at 9.8125 inches P.C.D.

6.7 Weight

Propeller complete with spinner - 718 lb approximate (reference only)

6.8 Equipment

The Standard of the associated equipment approved for use with these propeller is defined by the following documents or subsequent approved issues.

	(c) R391/6-132-F/3	(c) R391/6-132-F/10
Propeller equipment set drawing	697055001 Issue 15A	697090001 Issue 1C
Aircraft Maintenance Manual (See note 8.7)	AMM1093	AMM1097

The equipment set comprises the propeller plus the following units.

Spinner (Anti iced & De-iced)

Auxiliary Pump

Overspeed Governor
BETA Tube Assembly

Pitch Control Unit

De-Icing Equipment
- Brush Block Bracket
- Timer Unit

FADEC Software Standard See note 8.3

7. LIMITATIONS

7.1 Crosswind and Tailwind Restrictions.

7.1.1. Maintenance Ground Running.

The following limitations apply when ground running is carried out with the aircraft static and not pointed into wind +/- 45º.

(c) R391/6-132-F/3

Wind Direction	Engine Power	Max Wind Speed
45º - 90º 270º - 315º	less than 1000 shp	60 kts
45º - 90º 270º - 315º	greater than 1000 shp	15 kts
90º - 270º	less than 1000 shp	45 kts
90º - 270º	1000 shp to 4000 shp	15 kts
90º - 270º	greater than 4000 shp	5 kts

(c) R391/6-132-F/10

Wind Direction	Wind Speed	Engine Power
45º - 90º 270º - 315º	0 to 25 kts 26 to 35 kts 36 to 45 kts	4705 Maximum Less than 2500 shp Less than 1250 shp
90º - 135º 225° - 270°	0 to 25 kts 26 to 35 kts 36 to 45 kts	4705 Maximum Less than 2500 shp Less than 1250 shp
135º - 225º	0 to 25 kts 26 to 35 kts 36 to 45 kts	4705 Maximum Less than 2500 shp Less than 1250 shp

Ground maintenance running in winds greater than 45 knots is not permitted.

7.1.2. Flight Operations

For take-off, when the aircraft is not pointed into the wind +/- 45 deg the following limitations apply until the aircraft speed is greater than the wind speed.

(c) R391/6-132-F/3

Wind Direction	Wind Speed, Knots	Engine Power, SHP
45° to 60° and 300° to 315°	0 to 50	4705 maximum
45° to 60° and 300° to 315°	51 to 60	Less than 1000
60° to 75° and 285° to 300°	0 to 40	4705 maximum
60° to 75° and 285° to 300°	41 to 60	Less than 1000
75° to 90° and 270° to 285°	0 to 35	4705 maximum
75° to 90° and 270° to 285°	36 to 60	Less than 1000
90° to 270°	0 to 5	4705 maximum
90° to 270°	6 to 20	Less than 4000
90° to 270°	21 to 45	Less than 1000

(c) R391/6-132-F/10

Wind Direction	Wind Speed	Engine Power
45º to 90º 270º to 315º	0 to 25 kts 26 to 35 kts 36 to 45 kts	4705 Maximum Less than 2500 shp Less than 1250 shp
90º to 135º 225º to 270º	0 to 20 kts 21 to 35 kts 36 to 45 kts	4705 Maximum Less than 2500 shp Less than 1250 shp
135º to 225º	0 to 15 kts 16 to 35 kts 36 to 45 kts	4705 Maximum Less than 2500 shp Less than 1250 shp

Flight operation in winds greater than 45 knots is not permitted.

7.2 The following declared limitations and ratings shall apply:

	(c) R391/6-132-F/3	**(c)R391/6-132-F/10**
Maximum Take-off Engine Power	4705 SHP (100%)	4705 SHP (100%)
Maximum Take-off Engine Torque	1732 lbft (100%)	1732 lbft (100%)
Maximum Take-off Propeller Speed	1020.7 ± 1 rev/min (100%)	1020.7 ± 1 rev/min (100%)
Maximum Continuous Engine Power	4705 SHP (100%)	4705 SHP (100%)
Maximum Continuous Engine Torque	1732 lbft (100%)	1732 lbft (100%)
Maximum Propeller Overspeed	1143 rev/min (112.0%)	1143 rev/min (112.0%)
Maximum Permitted Transient Engine Torque	1933 lbft (111.6%)	1933 lbft (111.6%)

SEE NOTE 8.6

8. NOTES

8.1 The approval does not show that compliance with the aircraft de-icing requirements has been achieved

8.2 Drawings and Specifications

	(c) R391/6-132-F/3	**(c) R391/6-132-F/10**
General Arrangement Drawing	697039101	697091101
Installation Drawing	697039001	697091001
Design Specification	91DS0590	97DS0615

8.3 FADEC Software Standard AE21D03V3 23074041

The equipment may be used with later approved FADEC software standards controlled in accordance with Rolls-Royce documents as follows:

8.3.1 (c) R391/6-132-F/3

TITLE	**REPORT No.**	**RTCA/ DO1-78B DOC. NO.**
Software Quality Assurance Plan	EDR 16555	11.5
Software Configuration Management	EDR 17435	11.4
Plan for Software Aspects of Certification	EDR 16655A	11.1

8.3.2 (c) R391/6-132-F/10

Software specification	EDS 3403A	RTCA/DO-178B level A

8.4 De-Icing Timer Unit Software Standard

(c) R391/6-132-F/3	40555-519
(c) R391/6-132-F/10	34555-701

The equipment may be used with later approved De-Icing Timer Unit software standards controlled in accordance with Messier - Dowty Electronics documents as follows:-

	(c) R391/6-132-F/3		**(c) R391/6-132-F/10**	
TITLE	**REPORT No.**	**RCTA DO 178B DOC. No.**	**REPORT No.**	**RCTA DO 178B DOC. No.**
Software Accomplishment Summary	40019	11.2	C27J00196	11.2
Software Configuration Index	40017	11.15 & 11.16	C27J00197	11.15 & 11.16
Plan for Software Aspects of Certification	40013	11.1	C27J00195	11.1

8.5 Component Life Limits

8.5.1 Life limitations are specified in the approved Airworthiness Limitations section of the Maintenance Manual.

8.5.2 The Propeller restoration time / calendar life is to an approved DAP bulletin, specified in the approved Airworthiness Limitations section of the Maintenance Manual.

8.6 Only engine power and torque are displayed in the Lockheed 382J and Alenia Aerospazio C-27J Spartan cockpit, hence only engine powers and torques are referenced in this Data Sheet.

For the Lockheed 382J the maximum take-off engine power of 4705 SHP and torque of 1732 lb ft are equivalent to a propeller power of 4591 SHP and a propeller torque of 23,623 lb ft.

For the Alenia Aerospazio C-27J Spartan the maximum take off engine power of 4705 SHP and torque of 1732 lbft are equivalent to a propeller power of 4642 SHP and a propeller torque of 23886 lbft.

8.7 The propeller equipment set drawing 697055001 for the (c) R391/6-132-F/3 includes Control Harnesses Nos. 1 and 2, the Auxiliary Pump Harness and the De-icing Harness. These items are not part of the certificated equipment.

The propeller equipment set drawing 697090001 for the (c) R391/6-132-F/10 includes the Auxiliary Pump Harness and the De-icing Harness. These items are not part of the certificated equipment.

9. MANUALS

	(c) R391/6-132-F/3		**(c) R391/6-132-F/10**	
	CMM	AMM Publication No	CMM	AMM Publication No
Brush Block Bracket Unit	30-60-03	1093	30-60-07	1097
De-Icing Timer Unit	30-60-04	1093	30-60-06	1097
Propeller	61-10-43	1093	61-10-51	1097
Spinner	61-10-44	1093	61-10-52	1097
Pitch Control Unit	61-20-42	1093	61-20-51	1097
Overspeed Governor	61-20-43	1093	61-20-52	1097
Auxiliary Pump	61-20-44	1093	61-20-53	1097
Beta Tubes	61-20-45	1093	61-20-50	1097