## (2) Douglas DC-3 and Dakota

UK National Airworthiness Directives previously published in CAP 476 – Mandatory Aircraft Modifications and Inspections Summary

**CAA AD No:** 2840 PRE 80

**Associated Material:** 1095

**Description:** To move ground supply relay to new position and introduction of a warning lamp on the port doorway side member at Stn 86.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet.

**CAA AD No:** 2841 PRE 80

**Associated Material:** 1097

**Description:** To strengthen wing root fillet ribs and attachments. Modification may be detected by an extra thickness of metal (20 SWG) between the fillet and the wing skin.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet.

**CAA AD No:** 2842 PRE 80

**Associated Material:** 1099

**Description:** To obviate failure of the flap operating shaft.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet.

**CAA AD No:** 2843 PRE 80

**Associated Material:** 1106

**Description:** Improved universal joint in the fuel selector valve control.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet.

**CAA AD No:** 2844 PRE 80

**Associated Material:** 1107

**Description:** To improve the fuel tank filler neck seal.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet.

**CAA AD No:** 2845 PRE 80

**Associated Material:** S688

**Description:** To provide six additional 2 BA nuts and bolts on access panel, adjacent to exhaust pipe expansion joint.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet.

**CAA AD No:** 2846 PRE 80

**Associated Material:** S694

**Description:** Introduction of Starter Relay Failure Warning Lights.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet.

**CAA AD No:** 2847 PRE 80

**Associated Material:** S599

**Description:** Introduction of flameproof hose.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet. The following Mods are acceptable alternatives: BOAC Mod. P12755 or P22218, BEAC Mod. P–1–4 Skyways Mod. S371 Airtech Mod. AT101

**CAA AD No:** 2848 PRE 80

**Associated Material:** S607

**Description:** Fireproofing of firewall.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet. The following Mods. are acceptable alternatives: BOAC Mod. P12575 BEAC Mod. P–35–2 Skyways Mod. S359 Airtech Mod. AT103.

**CAA AD No:** 2849 PRE 80

**Associated Material:** S617

**Description:** Flameproofing of fast feathering circuits.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet. The following Mods are acceptable alternatives: BOAC Mod. P12757 BEAC Mod. P–35–2 Skyways Mod. S359 Airtech Mod. AT103.

**CAA AD No:** 2850 PRE 80

**Associated Material:** S622

**Description:** Installation of fire extinguisher system.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet. The following Mods. are acceptable alternatives: BOAC Mod. P22082 BEAC Mod. U–4–5 Skyways Mod. S331. Airtech Mod. AT104.

**CAA AD No:** 2851 PRE 80

**Associated Material:** S646 or S652

**Description:** Installation of fire warning light.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet. The following Mods. are acceptable alternatives: BOAC Mod. P22082 BEAC Mod. E–32–4 Skyways Mod. S331, Airtech Mod. AT105.

**CAA AD No:** 2852 PRE 80

**Associated Material:** S760

**Description:** Provision of flexible sleeving inside engine electrical conduits to prevent chafing.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet. An alternative modification acceptable to the CAA may be embodied.

**CAA AD No:** 2853 PRE 80

**Associated Material:** Douglas Service Bulletin DC3 No. 239

**Description:** Modification of the engine hydraulic pump selection system.

**Applicability – Compliance – Requirement**

Compliance required as detailed in Modification Leaflet. The following modifications are acceptable as alternatives: Transair TRA/M/109 or British Airways BEA No. H–4–21.

**CAA AD No:** 2855 PRE 80

**Associated Material:** –

**Description:** Inspection of fuel vapour return lines.

**Applicability – Compliance – Requirement**

Following a fire in the air believed to have been caused by a leaking rubber hose joint in the fuel vapour return line situated adjacent to electrical equipment, all Dakota aircraft should now have been examined to ascertain that no rubber hose and clip type joints occurred in the fuel system pipe lines in the wheel bay including the vapour vent return line. Any such hose and clip joints in the wheel bay should have been eliminated by the substitution of all metal joints.

**CAA AD No:** 2856 PRE 80

**Associated Material:** CAA Letter ACC/1214 dated 14–4–67

**Applicability – Compliance – Requirement**

Before the CAA will issue or renew Certificates of Airworthiness for Dakota (Douglas C47) aircraft the following requirements must be fulfilled:

1 (a) Dakota 3 Aircraft must be fitted with Pratt and Whitney S1C3G, R1830–49, –57, –82, –92 or –96 engines.

(b) Dakota 4 Aircraft must be fitted with Pratt and Whitney S3C4G, S4C4G, R1830–43, –43A, –67, –90C or 90D engines.

c) All these engines must have installed a reduction gear of 16.9.

Reduction gear nameplates or housings must be marked '16/9' to denote the gear ratio and 'R' to indicate rigid or 'D' to indicate non-rigid (spline coupled). Engine log books must also be annotated but only overhaul organisations may mark the gear housings.

d) Propeller blades 6477A–0 and interchangeable blades 6277–0 must not be used with hub 23E50 if rigid type reduction gears are installed.

e) Propeller blades 6153–18, 6353–18, 6229–18 and 6429–18 may be used with propeller hub 23E50 and a Placard is required 'Avoid continuous operation between 1900 and 2050 rev/min'. If rigid type reduction gears are fitted an additional placard is required – 'Avoid continuous operation between 1500 and 1650 rev/min and avoid take-off operation between 2450 and 2700 rev/min'.

See also FAA Aircraft Data Sheet A669 for other propeller blade and hub combinations and limitations.

2 On Dakota 4 Aircraft installed with Pratt and Whitney S4C4G or R1830–90C engines, the 2 speed supercharger gear controls must be positively locked for operation in low gearonly.Thisshouldbedonebyatiebarontherearcoveroftheengine, thedisconnection of the engine controls in the power plant bay, and a note at the supercharger control in the cockpit. Approval is granted only in certain aerial work circumstances to use this control.

3 Dakota 5 Aircraft are fitted with R1830–94 engines and are certified in the Private Category only.

4 Dakota 6 are similar to Dakota aircraft having R1830–90D or 90C engines, undercarriage doors, Goodyear single disc brakes, and quicker undercarriage retraction. Also Paddle blade type propeller Hamilton 23E50–473–6519–18.

5 At conversion from military to civil use the outer wing and centre section lower surface attachment angles and doublers must be changed to the standards of AD66–18–2 irrespective of the total hours flown by the aircraft.

6 The non-ram air intake system, if installed must be made inoperative by positively locking the intake door in the closed position and rivetting a blanking plate over the control lever quadrant to prevent inadvertent operation, in accordance with Douglas Drawing 5115226 or equivalent Forward facing filtered air intakes are not approved by the FAA. See also Item 18.

7 A satisfactory windscreen wiper must be installed.

8 All aircraft must be fitted with oil cooler air exit shutters unless the aircraft has been otherwise modified to an approved scheme.

9 A vacuum gauge must be installed in the instrument vacuum system.

10 To comply with current Air Navigation Order, the following must be provided for Transport Category (Passenger) Standard.

i) Emergency lighting in the passenger compartment, usually three inertia and manual control lights will be sufficient depending on the interior layout.

ii) Method of illumination of the leading edges of the mainplanes for ice observation at night.

iii) Flashing navigation lights to be fitted giving the correct angular range of light.

iv) Torches.

v) First Aid Kits and manuals.

vi) Means of indicating to the passengers that seat belts must be fastened and smoking prohibited.

vii) Exits and Emergency Exits must be marked; external marking must be easily visible from the ground.

viii) The aircraft, flight and navigation instrumentation must be checked for compliance.

ix) Break-in points must be marked on the fuselage (ARB Specification No. 7) usually two points will be sufficient.

x) Spare electrical fuses to 10% of each value or 3, whichever is most, must be provided.

xi) Safety harness for the pilots installed to an approved scheme.

11 The undercarriage must be in accordance with Douglas Service Bulletin No. 242 as supplemented by Douglas Service Bulletin No. 261 and tyres of 12 ply rating or over must be fitted.

12 When AN4/7A and AN4/10A bolts are used for mainplane attachments they must be torque loaded to 135 to 150 in/lb. The only British equivalent bolts are A25–4E, –5E and –6E and these must be torque loaded to 130 to 135 in/lb. American and British bolts must not be mixed on any one aircraft and similar type stiff nuts must be used being assembled dry.

13 Oil hoppers should be removed from oil tanks to an approved modification.

14 Several types of fire warning lights may be fitted in the cockpit if a hinged night hood is fitted or if a rotary dimmer switch is fitted; these must be wire locked in 'day' position using fusewire.

15 The cabin lining, upholstery, etc. should be fire resistant (ARB Specification No. 8). The seating layout must be approved by the Authority and suitable cabin fire extinguishers must be provided.

16 Early type wing tips having stringers in the top surface of 1/2 x 7/16 x.040 must be reworked to Douglas Service Bulletin No. 215 Supplement No. 1 of 30–11–43 and Douglas Service Letter of 19–10–43. The later types have stringers of 7/8 x 1/2 x.051 and these are satisfactory.

17 The Radio Station must comply with CAA requirements.

18 The selector mechanism for the carburettor 'Hot Air' supply must be rearranged, if necessary, to operate in the following manner, and placarded accordingly:

| | | |
|---|---|---|
| FORWARD | – | RAM AIR |
| AFT | – | HOT AIR |

**CAA AD No:** 001-07-78

**Associated Material:** N/A

**Description:** Flap Operating Systems

**Applicability – Compliance – Requirement**

Applicable to Dakota DC3/C47 aircraft.

Within 50 flight hours of the receipt of this CAA Emergency Airworthiness Directive, Operators are to perform the following inspection:

1 Remove all panels to gain access to flap jack and parallelogram linkage, including panel flap recess covering aft end of linkage.

2 Inspect link rods for bow, or sign of rubbing or chafing.

3 With flaps up check that with flap hydraulic jack bottomed, that the flap trailing edge is lightly contacting the buffer pads on the wing.

4 Operate the flaps slowly up and down stopping at each setting. Check that the link rods clear the rib cut out through which they pass by at least on-quarter inch. Critical Points are with flaps up and three quarters down.

5 Replace any defective link rods. Remove material from rib cut out to achieve minimum clearance; this will involve de-rivetting of stiffener angles.

If defective rods are found as a result of this inspection Operators are requested to advise the Safety Data Unit, CAA, Redhill, quoting this CAA Emergency AD number. Steps 1 to 4 of the inspection should be accomplished at any time the flap rigging is adjusted.