



---

# TYPE-CERTIFICATE DATA SHEET

NO. EASA.IM.A.665

**for**  
**SD3 Series**

**Type Certificate Holder**  
Viking Air Limited

1959 de Havilland Way  
Sidney, B.C.  
V8L 5V5 Canada

For models: SD3-30  
SD3-60  
SD3-SHERPA  
SD3-60-SHERPA



Intentionally left blank



<b>SECTION A: SD3-30</b>	<b>7</b>
<b>A.I. General</b>	<b>7</b>
1. Type/ Model/ Approved Variants	7
2. Airworthiness Category	7
3. Manufacturer	7
4. EASA Type Certification Application Date	7
5. State of Design Authority	7
6. State of Design Authority Type Certificate Date	7
7. EASA Type Certification Date	7
<b>A.II. EASA Certification Basis</b>	<b>7</b>
1. Reference Date for determining the applicable requirements	7
2. Airworthiness Requirements	7
3. Special Conditions	8
4. Exemptions	8
5. (Reserved) Deviations	8
6. Equivalent Safety Findings	8
7. Environmental Protection	8
<b>A.III. Technical Characteristics and Operational Limitations</b>	<b>9</b>
1. Type Design Definition	9
2. Description	9
3. Equipment	9
4. Dimensions	9
5. Engine	9
6. Load factors	10
7. Propeller	10
8. Fluids	10
9. Fluid capacities	11
10. Air Speeds	11
11. Flight Envelope - Maximum Operating Altitude	12
12. Approved Operations Capability	12
13. Maximum Masses	12
14. Centre of Gravity Range	12
15. Datum	13
16. Control surface deflections	13
17. Levelling Means	13
19. Maximum Passenger Seating Capacity	14
20. Baggage/ Cargo Compartments	14
21. Wheels and Tyres	14
22. (Reserved)	14
<b>A.IV. Operating and Service Instructions</b>	<b>15</b>
1. Flight Manual	15
2. Maintenance Manual	15
3. Structural Repair Manual	15
5. Illustrated Parts Catalogue	16
<b>A.V. Notes</b>	<b>17</b>
<b>SECTION B: SD3-60</b>	<b>20</b>
<b>B.I. General</b>	<b>20</b>
1. Type/ Model/ Approved Variants	20
2. Airworthiness Category	20
3. Manufacturer	20



4. EASA Type Certification Application Date .....	20
5. State of Design Authority.....	20
6. State of Design Authority Type Certificate Date.....	20
7. EASA Type Certification Date.....	20
<b>B.II. EASA Certification Basis .....</b>	<b>21</b>
1. Reference Date for determining the applicable requirements .....	21
2. Airworthiness Requirements .....	21
3. Special Conditions.....	22
4. Exemptions .....	22
5. (Reserved) Deviations .....	22
6. Equivalent Safety Findings .....	22
7. Environmental Protection.....	22
<b>B.III. Technical Characteristics and Operational Limitations .....</b>	<b>23</b>
1. Type Design Definition.....	23
2. Description.....	23
3. Equipment.....	23
4. Dimensions .....	23
5. Engine .....	24
6. Load factors .....	24
7. Propeller .....	24
8. Fluids.....	25
9. Fluid capacities.....	26
10. Air Speeds (all speed are specified as IAS).....	26
11. Flight Envelope - Maximum Operating Altitude .....	27
12. Approved Operations Capability.....	27
13. Maximum Masses .....	27
14. Centre of Gravity Range.....	27
15. Datum .....	27
16. Control surface deflections.....	28
17. Levelling Means .....	28
18. Minimum Flight Crew .....	28
19. Maximum Passenger Seating Capacity .....	28
21. Wheels and Tyres (See NOTE 11) .....	29
22. (Reserved).....	29
<b>B.IV. Operating and Service Instructions .....</b>	<b>30</b>
1. Flight Manual .....	30
2. Maintenance Manual.....	30
3. Structural Repair Manual.....	31
4. Weight and Balance Manual.....	31
5. Illustrated Parts Catalogue .....	31
<b>B.V. Notes .....</b>	<b>32</b>
<b>SECTION C: SD3-SHERPA.....</b>	<b>35</b>
<b>C.I. General .....</b>	<b>35</b>
1. Type/ Model/ Variant .....	35
2. Airworthiness Category .....	35
3. Manufacturer.....	35
4. EASA Type Certification Application Date .....	35
5. State of Design Authority.....	35
6. State of Design Authority Type Certificate Date.....	35
7. EASA Type Certification Date.....	35



<b>C.II. EASA Certification Basis .....</b>	<b>35</b>
1. Reference Date for determining the applicable requirements .....	35
2. Airworthiness Requirements .....	36
3. Special Conditions.....	36
4. Exemptions .....	36
5. (Reserved) Deviations .....	36
6. Equivalent Safety Findings .....	36
7. Environmental Protection.....	36
<b>C.III. Technical Characteristics and Operational Limitations .....</b>	<b>37</b>
1. Type Design Definition.....	37
2. Description.....	37
3. Equipment.....	37
4. Dimensions .....	37
5. Engine .....	37
6. Load factors .....	37
7. Propeller .....	38
8. Fluids.....	38
9. Fluid capacities.....	38
10. Air Speeds .....	39
11. Flight Envelope – Maximum Operating Altitude .....	39
12. Approved Operations Capability.....	39
13. Maximum Masses.....	40
14. Centre of Gravity Range.....	40
15. Datum .....	40
17. Levelling Means .....	40
18. Minimum Flight Crew .....	40
19. Maximum Passenger Seating Capacity .....	40
20. Baggage/ Cargo Compartments.....	41
21. Wheels and Tyres.....	41
22. (Reserved).....	41
<b>C.IV. Operating and Service Instructions .....</b>	<b>42</b>
1. Flight Manual .....	42
2. Maintenance Manual.....	42
3. Structural Repair Manual.....	42
4. Weight and Balance Manual.....	42
5. Illustrated Parts Catalogue .....	42
<b>C.V. Notes .....</b>	<b>43</b>
<b>SECTION D: SD3-60-SHERPA .....</b>	<b>44</b>
<b>D.I. General .....</b>	<b>44</b>
1. Type/ Model/ Variant .....	44
2. Airworthiness Category .....	44
3. Manufacturer.....	44
4. EASA Certification Application Date .....	44
5. State of Design Authority.....	44
6. State of Design Authority Type Certificate Date.....	44
7. EASA Type Certification Date.....	44
<b>D.II. EASA Certification Basis .....</b>	<b>45</b>
1. Reference Date for determining the applicable requirements .....	45
2. Airworthiness Requirements (See Note 1) .....	45
3. Special Conditions.....	45



4. Exemptions .....	45
5. (Reserved) Deviations .....	45
6. Equivalent Safety Findings .....	45
7. Environmental Protection.....	45
<b>D.III. Technical Characteristics and Operational Limitations.....</b>	<b>46</b>
1. Type Design Definition.....	46
2. Description.....	46
3. Equipment.....	46
4. Dimensions .....	46
5. Engine .....	46
6. Load factors .....	47
7. Propeller .....	47
8. Fluids.....	47
9. Fluid capacities.....	48
10. Air Speeds (all speed are specified as IAS).....	48
11. Maximum Operating Altitude .....	48
12. Approved Operations Capability.....	48
13. Maximum Masses .....	49
14. Centre of Gravity Range.....	49
15. Datum .....	49
17. Levelling Means .....	50
18. Minimum Flight Crew .....	50
19. Maximum Passenger Seating Capacity .....	50
20. Baggage/ Cargo Compartments.....	50
21. Wheels and Tyres.....	50
22. (Reserved).....	50
<b>D.IV. Operating and Service Instructions .....</b>	<b>51</b>
1. Flight Manual .....	51
2. Maintenance Manual.....	51
3. Structural Repair Manual.....	51
4. Weight and Balance Manual.....	51
5. Illustrated Parts Catalogue .....	51
<b>D.V. Notes .....</b>	<b>52</b>
<b>SECTION ADMINISTRATIVE .....</b>	<b>54</b>
<b>I. Acronyms &amp; Abbreviations .....</b>	<b>54</b>
<b>II. Type Certificate Holder Record .....</b>	<b>54</b>
<b>III. Change Record .....</b>	<b>54</b>



## **SECTION A: SD3-30**

### **A.I. General**

#### 1. Type/ Model/ Approved Variants

1.1 SD3

1.2 SD3-30

1.3 100, 200, 300, 500 (See NOTE 1)

#### 2. Airworthiness Category

Transport Category (originally)

Large Aeroplane

#### 3. Manufacturer

Short Brothers PLC (formerly Short Brothers & Harland Limited and Short Brothers Limited)

Airport Road

Belfast

BT3 9DZ

Northern Ireland

#### 4. EASA Type Certification Application Date

Original date of application to CAA (UK) 12<sup>th</sup> November 1971

Note: This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.

#### 5. State of Design Authority

Transport Canada (TCCA)

#### 6. State of Design Authority Type Certificate Date

9<sup>th</sup> February 1976

The original State of Design Authority was the UK Civil Aviation Authority (CAA).

Type Certificate No. BA 11 was issued by the UK CAA.

Note: This aircraft type was accepted as a grandfathered product when State of Design responsibility transferred to EASA on 28<sup>th</sup> September 2003 when the EU Regulations came into force.

#### 7. EASA Type Certification Date

Not applicable; refer to A.I.6 above.

This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.

### **A.II. EASA Certification Basis**

#### 1. Reference Date for determining the applicable requirements

Original date of application to CAA (UK) 12<sup>th</sup> November 1971

#### 2. Airworthiness Requirements

CAA (UK) Certification



BCAR Section C Issue 7 dated 15 May 1971  
BCAR Section D Issue 12 dated 30 August 1974  
BCAR Section J Issue 3 dated 15 September 1966  
BCAR Section R Issue 4 dated 10 April 1974

BCAR Blue Paper No 527 dated 7 December 1973  
BCAR Blue Paper No 553 dated 29 June 1971  
BCAR Blue Paper No 583 dated 6 May 1974

BCAR Working Draft Papers:

No 421 dated 17 July 1967  
No 455 dated 27 May 1968  
No 513 dated 14 December 1973

### 3. Special Conditions

None documented.

### 4. Exemptions

None documented.

### 5. (Reserved) Deviations

None documented.

### 6. Equivalent Safety Findings

A Direct Vision window as required by Chapter D4-2 paragraph 3.1.2 is not fitted.

The SD3-30 is accepted on the grounds of equivalent safety. (Letter references SB & H jwp/amr/5299 dated 24 July 1974 and CAA AP/ASH/1813 dated 13 September 1974).

### 7. Environmental Protection

Noise: ICAO Annex 16, Volume I

For further details see EASA TCDSN: EASA.IM.A.665.

Fuel venting: ICAO Annex 16, Volume II





### **A.III. Technical Characteristics and Operational Limitations**

#### **1. Type Design Definition**

The CAA (UK) Type Design is defined on Drawing SD3-08-1000, introduced under authority of Modification No 5001.

Note: The UK type design standard was accepted as a grandfathered product when State of Design responsibility transferred to EASA on 28<sup>th</sup> September 2003.

#### **2. Description**

The SD3-30 is a twin engine, unpressurised, large aeroplane (originally designed as a transport category regional commuter aeroplane) designed and manufactured by Short Brothers PLC, Belfast, Northern Ireland.

The SD3-30 is a strut-braced, high wing aeroplane, incorporating a tailplane with twin fins and rudders and a retractable tricycle (nosewheel) undercarriage.

The aircraft, as originally type approved by the UK Civil Aviation Authority, has a maximum take-off weight of 10,387 Kg (22,900 lbs) and is powered by two Pratt and Whitney of Canada PT6A-45 turbo-prop engines.

The fuselage has cabin configurations for the carriage of passengers or freight. The aircraft is approved for a maximum of 30 passengers.

The SD3-30 is adaptable for use in a variety of roles but is principally used for passenger and freight transport.

#### **3. Equipment**

Refer to SD3-30 Equipment Summary SD3/EAS/001 for listings of the approved equipment which is incorporated in the type design.

#### **4. Dimensions**

Overall Length: 17.41m (58 feet, 0.54 inch)

Overall Span: 22.76 m (74 feet, 8.2 inches)

Overall Height: 4.95m (16 feet, 3 inches)

Refer to the SD3-30 Aircraft Maintenance Manual SD3/MM Chapter 6 for details of other principal dimensions.

#### **5. Engine**

##### **5.1. Model (See NOTE 1 and NOTE 2)**

Two Pratt & Whitney of Canada Limited PT6A-45A engines, or

Two Pratt & Whitney of Canada Limited PT6A-45B engines (post SB Mod 5656), or

Two Pratt & Whitney of Canada Limited PT6A-45R engines (post SB Mod 6031)

##### **5.2 Type Certificate – EASA.IM.E.078 (Transport Canada Type Certificate E-12) (for all Models)**

##### **5.3 Limitations - Refer to Engine Type Certificate Data Sheet EASA.IM.E.078 (Transport Canada Type Certificate E-12) (for all Models)**



## 6. Load factors

Operation is limited to normal flying manoeuvres. The maximum normal accelerations (load factors) which the structure has been designed to withstand without permanent deformation is +2.83G and -1.0G (with flaps retracted) and +2.0G and ZeroG (with flaps extended).

## 7. Propeller

- 7.1 Model - Hartzell HC-B5MP-3A
- 7.2 Type Certificate - FAA Type Certificate P44GL
- 7.3 Number of blades - 5 (Type M10282AB+6)
- 7.4 Diameter – 281.94 cm (111 inches) maximum; 281.18 cm (110.7 inches) minimum
- 7.5 Sense of Rotation – Anti-clockwise (looking aft)

## 8. Fluids

### 8.1 Fuel (See NOTE 3)

Fuels conforming to PWA Specifications 522; refer to PW (C) Service Bulletin 3044. The following fuels, approved fuels are to the latest issue of the following specifications, satisfy these requirements:

United States	U.K.	Canadian
ASTM D1655-70		
Jet A	None	CGSB 3.23
Jet A-1	D. Eng.R.D 2494	CGSB 3.23
Jet B	D. Eng.R.D 2486	CGSB 3.22
MIL-T-5624L, Grade JP-4	D. Eng.R.D 2454	CGSB 3.22
MIL-T-5624L, Grade JP-5	D. Eng.R.D 2498	-
MIL-T-83133A, Grade JP-8	D. Eng.R.D 2453	-

### 8.2 Oil (See NOTE 4)

The approved oils for use in this particular installation conform to PWA specification No. 521, Synthetic Type II. For full list of approved brand oils refer to PW (C) Service Bulletin 13001.

United States	U.K.
MIL-L-23699	Aeroshell 500 Esso 2380 Castrol 205 B.P. Enerjet 51

### 8.3 Coolant

Not applicable.



## 9. Fluid capacities

### 9.1 Fuel (See NOTE 5 and NOTE 6(b))

	<b>Litres</b>	<b>Imperial Gallons</b>	<b>U.S. Gallons</b>
Total Usable	2182	480	576.4
Total Unusable	15.9	3.5	4.2
Total Capacity	2198	483.5	580.6

### 9.2 Oil (See NOTE 6(b) and 6(c))

	<b>Litres</b>	<b>Imperial Gallons</b>	<b>U.S. Gallons</b>
Left Tank	5.68	1.25	1.5
Right Tank	5.68	1.25	1.5
Total Usable	11.36	2.50	3.0
Total Unusable	15.13	3.33	4.0
Total Capacity	26.49	5.83	7.0

### 9.3 Coolant system capacity

Not applicable.

## 10. Air Speeds

(all speeds are specified as IAS)

V<sub>MO</sub> (Maximum Operating) 198 Kts

V<sub>A</sub> (Manoeuvring) - 5,897 kg (13,000 lbs) 121 Kts  
- 10,387 kg (22,900 lbs) 157 Kts  
- 10,250 kg (22,600 lbs) 157 Kts  
- 10,160 kg (22,400 lbs) 157 Kts

V<sub>FE</sub> (Flaps Extended) - 4° Flaps 148 Kts (See NOTE 7)  
- 8° Flaps 148 Kts  
- 15° Flaps 138 Kts  
- 35° Flaps 125 Kts

V<sub>MCG</sub> (Minimum Control Speed Ground) 76 Kts

V<sub>MCA</sub> (Minimum Control Speed Air) 77 Kts (4° Flaps and 8° Flaps)  
76 Kts (15° Flaps)

V<sub>MCL</sub> (Minimum Control Speed Landing) 79 Kts

V<sub>LO</sub> (Landing Gear Operating) 148 Kts

V<sub>LE</sub> (Landing Gear Extended) 161 Kts



#### 11. Flight Envelope - Maximum Operating Altitude

20,000 feet (when supplemental oxygen and equipment is provided for the crew and passengers in accordance with the applicable operating rules).

#### 12. Approved Operations Capability

The aeroplane is eligible for the following kinds of operation when the appropriate instruments and equipment required by the applicable operating regulations is installed and serviceable:

- Carriage of passengers
- Carriage of cargo (See NOTE 8)
- VFR
- IFR day and night
- Extended over-water flight

The aeroplane is approved for ditching using the recommended procedures specified in Section 3 of the applicable Flight Manual.

The aeroplane may be flown into known or forecast icing conditions provided that the required powerplant and airframe ice protection equipment is installed and the systems are serviceable. See NOTE 9.

#### 13. Maximum Masses

Maximum Ramp Weight: 10,024 kg (22,100 lbs)

Maximum Takeoff Weight: 9,979 kg (22,000 lbs)

Maximum Landing Weight: 9,843 kg (21,700 lbs)

SD3-30 aeroplanes incorporating Short Brothers CMC Mod. 5192 may be operated at the following maximum weights:

Maximum ramp weight 10,205 kg (22,500 lbs)

Maximum takeoff weight 10,160 kg (22,400 lbs)

Maximum landing weight 10,024 kg (22,100 lbs)

SD3-30 aeroplanes incorporating Short Brothers CMC Mod. 5600 may be operated at the following maximum weights:

Maximum ramp weight 22,700 lbs (10,296 kg)

Maximum takeoff weight 22,600 lbs (10,251 kg)

Maximum landing weight 22,300 lbs (10,115 kg)

SD3-30 aeroplanes incorporating Short Brothers CMC Mod. 6036 may be operated at the following maximum weights:

Maximum ramp weight 23,000 lbs (10,432 kg)

Maximum takeoff weight 22,900 lbs (10,387 kg)

Maximum landing weight 22,600 lbs (10,251 kg)

#### 14. Centre of Gravity Range

Refer to the centre of gravity limitations as published in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual. Refer to AFM listing in Section A.IV.1 of this TCDS.

Note: The forward C.G. limits that must be observed will vary depending on the operating weight of the aeroplane.



## 15. Datum

The C.G. datum is at fuselage station 200 on the center line of aircraft and is marked on the underside of the fuselage.

## 16. Control surface deflections

Elevator	$25 \frac{1}{2}^{\circ} \pm 1^{\circ}$ up	$14 \frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Elevator trim tab`	$9^{\circ} \pm \frac{1}{2}^{\circ}$ up	$14 \frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Rudder	$29^{\circ} \pm 1^{\circ}$ left	$29^{\circ} \pm 1^{\circ}$ right
Left rudder trim tab	$13 \frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$ left	$13 \frac{1}{4}^{\circ} \pm \frac{3}{4}^{\circ}$ right
Right rudder trim tab	$22 \frac{1}{2} \pm 1^{\circ}$ left	$22 \frac{1}{2}^{\circ} \pm 1^{\circ}$ right
Left aileron	$22 \frac{3}{4}^{\circ} \pm \frac{1}{4}^{\circ}$ up	$13 \frac{1}{4}^{\circ} \pm \frac{1}{4}^{\circ}$ down
Right aileron	$23 \frac{3}{4}^{\circ} \pm \frac{1}{4}^{\circ}$ up	$12 \frac{3}{4}^{\circ} \pm \frac{1}{4}^{\circ}$ down
Aileron trim tab	$13^{\circ} \pm \frac{1}{2}^{\circ}$ up	$13^{\circ} \pm \frac{1}{2}^{\circ}$ down

NOTE: Aileron reflex  $1 \frac{1}{4}^{\circ} \pm \frac{1}{4}^{\circ}$

The above angles are all measured from the neutral position.

Flaps inner and outer: (\* See NOTE 10).

Nominal –  $0^{\circ}$  En-route, all engines operating

$8^{\circ}$  Down - Enroute, one engine inoperative Take-off and discontinued approach \*

$15^{\circ}$  Down - Takeoff and approach \*

$35^{\circ}$  Down - Landing

## 17. Levelling Means

Levelling is established using a straight edge and clinometer on two sets of datum points, one lateral, the other longitudinal.

The lateral datum points are the two seat rails on the floor of the passenger compartment at the front spar (Stn.238.17).

The longitudinal datum points are on the left side of the fuselage outside skin at Stn. 212.0 and 291.12.

Holes in the fuselage skin at these points are normally plugged by rubber blanking grommets. When required for levelling, the grommets are withdrawn and two special alignment pegs are inserted.



18. Minimum Flight Crew  
2 pilots are required.

19. Maximum Passenger Seating Capacity  
30 passenger seats in the main cabin area.

Note: The SD3-30 has been certificated to carry a maximum of 34 occupants, including crew.  
A supernumerary seat is installed in the flight deck.

20. Baggage/ Cargo Compartments  
The SD3-30 is incorporates a forward baggage compartment and an aft baggage compartment.  
Both compartment were initially certificated as meeting the requirements applicable to a Class D cargo compartment. See NOTE 11.

Forward Baggage Compartment: Maximum load is 227 kg (500 lbs)

Aft Baggage Compartment: Maximum load is 272 kg (600 lbs)

Baggage and/or cargo must be loaded in compliance with the compartment loading limitations specified in Section 2 of the applicable approved Flight Manual, supplemented by the Weight and Balance Manual. See NOTE 12.

21. Wheels and Tyres

The approved wheels and tyres are specified in the Illustrated Part Catalogue SD3/IPC/001, Chapter 32-40.

Tyre Inflation data is defined in the Aircraft Maintenance Manual, Chapter 12-10-32.

Tyre wear limitations are defined in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual. Refer to AFM listing in Section A.IV.1 of this TCDS.

22. (Reserved)



## A.IV. Operating and Service Instructions

### 1. Flight Manual

The following are the recognised approved Flight Manual publications:

For EU operators, the Variant 100 AFM is the applicable AFM to be used.

**FLIGHT MANUAL:** The limitations, recommended procedures and performance information required to meet the relevant requirements are contained in the following CAA approved Flight Manuals.

Aircraft Type	Variant		ENGINE TYPE	Doc. No.
SD3-30	100	CAA (UK)	PT6A-45A or 45B PT6A-45R	SBH 3.2 SBH 3.7
	200	FAA (USA)	PT6A-45A or 45B PT6A-45R	SBH 3.3 SBH 3.6
	300	DOT (Canada)	PT6A-45A PT6A-45R PT6A-45B	SBH 3.4 SBH 3.8 SB 3.9
	400	LBA (Germany)	PT6A-45A or 45B	SBH 3.3

The following Flight Manuals are not approved by the CAA.

Aircraft Type	Variant		ENGINE TYPE	Doc. No.
SD3-30	500	DOT (Australia)	PT6A-45B or 45R	SB 3.5

Note: At the date of initial issue of this TCDS there are no SD3-30 aircraft with PT6A-45A or -45B engines remaining in operational use.

### 2. Maintenance Manual

SD3-30 Maintenance Manual (SD3/AMM/)

SD3-30 Maintenance Programme (SD3/MP/001)

Note: The above publications were created in accordance with the applicable requirements of BCAR, Section A, Chapter A6-2 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers and Harland Limited.

The Maintenance Programme constitutes a Manufacturers Recommended Maintenance Programme as derived using modified MSG-2 methodology and has been accepted by the CAA (UK) and FAA as the equivalent to the MRB Report for the SD3-30 aircraft.

Subsequent amendments to these publications have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.

### 3. Structural Repair Manual

SD3-30 Structural Repair Manual (SD3/RM/001)

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A6-2 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers and Harland Limited.

Subsequent amendments to this publication have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.



#### 4. Weight and Balance Manual

SD3-30 Weight and Balance Manual (SD3/WB/ )

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-1 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers and Harland Limited.

At time of initial delivery, for each specific aircraft serial number, weight and balance data will have been issued by the manufacturer, Short Brothers and Harland Limited.

#### 5. Illustrated Parts Catalogue

SD3-30 Illustrated Part Catalogue (SD3/IPC/001)

Note: The above publication was created and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers and Harland Limited. Subsequent amendments to this publication have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.





## A.V. Notes

### NOTE 1.

The following are the approved National Variants as relating to the approved AFM documents for the SD3-30 aircraft.

Type	National Register	Variant	AFM Document	Engine Type
SD3-30	UK	100	SBH 3.2	PT6A-45B
	US	200	SBH 3.3	PT6A-45B
	Canada	300	SBH 3.4	PT6A-45A
	Australia	500	SBH 3.5	PT6A-45B or-45R
	Canada	300	SBH 3.9	PT6A-45B
	US	200	SBH 3.6	PT6A-45R
	UK	100	SBH 3.7	PT6A-45R
	Canada	300	SBH 3.8	PT6A-45R

Note: At the date of initial issue of this TCDS there are no SD3-30 aircraft with PT6A-45A or -45B engines remaining in operational use.

### NOTE 2.

On SD3-30 Airplanes:

A. 2 Pratt & Whitney aircraft of Canada Limited Model PT6A-45B engines may be installed in lieu of the Model PT6A-45A engines in accordance with Short Brothers CMC Mod. No. 5656.

Short Service Bulletin No. SD3-71-05 and SD3-71-06 refers to this subject.

B. 2 Pratt & Whitney aircraft of Canada Limited Model PT6A-45R engines may be installed in lieu of the Model PT6A-45A or PT6A-45B engines in accordance with Short Brothers PLC Modification No. 6031. Short Service Bulletin No. SD3-71-11 refers to this subject.

### NOTE 3.

Only the following fuel anti-icing additives are approved for use with the specified fuels provided that the concentration does not exceed 0.15% by volume.

U.S.A.	CANADA	U.K.
MIL-I-27686E	3-GP-526a	D.Eng.R.D. 2451

### NOTE 4.

The mixing of oils to different specifications is not permitted.

### NOTE 5.

SD3-30 airplanes incorporating Short Brothers CMC Mod 6689 (SD3-30) or 6867 (C23A) may be operated with the following maximum fuel capacity:

	<b>Litres</b>	<b>Imperial Gallons</b>	<b>U.S. Gallons</b>
Total Usable	2554	561.9	674.3

### NOTE 6.

(a) Current weight and balance report, including list of equipment included in certificated empty weight, and loading instructions when necessary must be in each aircraft at the time of original certification.

(b) Unusable fuel and system oil and all hydraulic fluid, must be included in the certified empty weight.



(c) System oil is the amount of oil required to fill the oil system and tanks up to its normal level. Dipstick readings calibrated in U.S. quarts indicate the quantity required to fill the tank to normal level, i.e. 1 U.S. Quart (0.833 Imperial quarts) below maximum level.

NOTE 7.

Aeroplanes incorporating Short Brothers CMC Mod 5423 have an additional flap setting of 4°. This setting may be used for takeoff and enroute one engine inoperative flight.

NOTE 8.

SD3-30 aeroplanes which have embodied Short Brothers CMC Mod 6700 (Rear Ramp Door) and CMC Mod 6504 may be operated in the Cargo Role using the main cabin compartment as a Class "E" Cargo Compartment.

NOTE 9.

Compliance has been demonstrated for operation into known or predicted icing conditions for airplanes that have Goodrich de-icing boots installed on the leading edges of the wing, stabilizer and fins.

SD3-30 aeroplanes with airframe de-icing provisions removed in accordance with Short Brothers CMC Mod. 5539 are not approved for flight in icing conditions.

NOTE 10.

Aeroplanes incorporating Short Brothers CMC Mod 5423 have an additional flap setting of 4°. This setting may be used for take-off and en-route one engine inoperative flight.

NOTE 11.

SD3-30 aeroplanes incorporating Short Brothers CMC Modification No 4816, originally approved to satisfy the requirements of 14 CFR Part 121.314(c), meet the requirements applicable to a Class C cargo compartment.

NOTE 12.

The current Weight and Balance Report, including list of equipment included in certified empty weight, and loading instructions when necessary, must be in each aircraft at the time of original certification and at all times thereafter.

NOTE 13.

The service life limitations applicable to the airframe, specified structural parts with defined life limitations and specified system parts with life limitations are defined in the SD3-30 Maintenance Manual Chapter 5.

NOTE 14.

All placards listed in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual must be installed in their specified locations. Refer to AFM listing in Section A.IV.1 of this TCDS.

NOTE 15.

The Model C23A aeroplanes are the same as the basic model SD3-30 Variant 200 except for the FAA approved modifications listed in Short Brothers Report No. SB/C23A/mods/001 and the deviations from the US Type Design as listed on the Certificate of Airworthiness for Export.



NOTE 16.

SD3-30 aeroplanes which have embodied Short Brothers CMC Mod 6700 (Rear Ramp Door) and CMC Mod 6504 may be operated in the Cargo Role using the main cabin compartment as a Class "E" Cargo Compartment.

NOTE 17.

SD3-30 aeroplanes incorporating Short Brothers CMC Mod 5952 (SD3-30) may be operated using a Collins APS-65 Autopilot adhering to the limitation and procedures detailed in the Airplane Flight Manual.



## **SECTION B: SD3-60**

### **B.I. General**

#### 1. Type/ Model/ Approved Variants

- 1.1 SD3
- 1.2 SD3-60
- 1.3 100, 200, 300, 400, 500 (See NOTE 1)

#### 2. Airworthiness Category

Transport Category (originally)

Large Aeroplane

#### 3. Manufacturer

Short Brothers PLC (formerly Short Brothers & Harland Limited and Short Brothers Limited)

Airport Road

Belfast

BT3 9DZ

Northern Ireland

#### 4. EASA Type Certification Application Date

Original date of application to CAA (UK) September 1980

Note: This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.

#### 5. State of Design Authority

Transport Canada (TCCA)

#### 6. State of Design Authority Type Certificate Date

The original State of Design Authority was the UK Civil Aviation Authority (CAA).

Type Certificate No. BA 11 was issued by the UK CAA.

SD3-60 was added 3<sup>rd</sup> Sept 1982.

*Note: This aircraft type was accepted as a grandfathered product when State of Design responsibility transferred to EASA on 28<sup>th</sup> September 2003 when the EU Regulations came into force.*

#### 7. EASA Type Certification Date

Not applicable; refer to B.I.6 above.

This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.



## **B.II. EASA Certification Basis**

### 1. Reference Date for determining the applicable requirements

Original date of application to CAA (UK) September 1980

### 2. Airworthiness Requirements

CAA (UK) Certification Pre Mod A8134

BCAR Section C Issue 7 dated 15 May 1971

BCAR Section D Issue 13 dated 1 October 1976

BCAR Section J Issue 3 dated 15 September 1966

BCAR Section R Issue 4 dated 10 April 1974

BCAR Section N Issue 2 dated 10 November 1978

BCAR Blue Paper No 553 dated 29 June 1971

BCAR Blue Paper No 575 dated 19 September 1976

BCAR Blue Paper No 698 dated 10 March 1978

BCAR Blue Paper No 700 dated 10 March 1978

BCAR Blue Paper No 701 dated 24 May 1978

BCAR Blue Paper No 709 dated 16 March 1979

BCAR Blue Paper No 737 dated 9 May 1980

BCAR Working Draft Paper:

No 421 dated 17 July 1967

BCAR Preliminary Draft Papers:

No 576 dated 17 August 1970

No 589 dated 1 March 1971

CAA (UK) Certification Post Mod A8134

BCAR Section D Issue 14 dated 1 December 1981

BCAR Section J Issue 3 dated 15 September 1966

BCAR Section R Issue 4 dated 10 April 1974

With the exceptions of:-

BCAR Blue Paper No 578 dated 16 March 1979

BCAR Blue Paper No 670 dated 30 May 1979

BCAR Blue Paper No 671 dated 9 May 1980

BCAR Blue Paper No 705 dated 11 February 1981

BCAR Blue Paper No 710 dated 16 March 1979

BCAR Blue Paper No 723 dated 22 May 1981



### 3. Special Conditions

None documented.

### 4. Exemptions

None documented.

### 5. (Reserved) Deviations

None documented.

### 6. Equivalent Safety Findings

A Direct Vision window as required by Chapter D4-2 paragraph 3.1.2 is not fitted.

The SD3-60 is accepted on the grounds of equivalent safety (CAA Letter 9/30/10GJ dated 12 August 1982).

### **CAA (UK) Certification Pre Mod A8134**

Section D Issue 13, Blue Paper Nos 575, 698, 700, 701, 709 and Working Draft Paper No 421 are subject to the interpretations in CAA letters 9/30/ASH/18/50 dated 30 September 1980, unreferenced dated 13 May 1981 and 9/30/ASH/1913/50 dated 2 October 1981.

### 7. Environmental Protection

Noise: ICAO Annex 16, Volume I

For further details see EASA TCDSN: EASA.IM.A.665.

Fuel venting: ICAO Annex 16, Volume II



### **B.III. Technical Characteristics and Operational Limitations**

#### **1. Type Design Definition**

The Baseline certification Type Design is defined on Drawing SD3-00-6320 xG dated 3 September 1982.

The FAA Type Design (1st production aircraft) is defined on Drawing SD3-00-6506 dated 3 September 1982.

The CAA (UK) Type Design is defined on Drawing SD3-00-6506 dated 3 September 1982 and Modification No 7001.

*Note: The UK type design standard was accepted as a grandfathered product when State of Design responsibility transferred to EASA on 28<sup>th</sup> September 2003.*

#### **2. Description**

The SD3-60 is a twin engine, unpressurised, large aeroplane (originally designed as a transport category regional commuter aeroplane) designed and manufactured by Short Brothers PLC, Belfast, Northern Ireland.

The SD3-60 is a strut-braced, high wing aeroplane, incorporating a tailplane with a single vertical fin tailplane and rudder and a retractable tricycle (nosewheel) undercarriage.

The aircraft, as originally type approved by the UK Civil Aviation Authority, has a maximum take-off weight of 12,291 kg (27,100 lbs) and is powered by two Pratt and Whitney of Canada PT6A-65R or -65AR or -67R turbo-prop engines.

The fuselage has cabin configurations for the carriage of passengers or freight. The aircraft is approved for a maximum of 39 passengers.

The SD3-60 is adaptable for use in a variety of roles but is principally used for passenger and freight transport.

#### **3. Equipment**

Refer to SD3-60 Equipment Summary SD3-60/EAS/001 for listings of the approved equipment which is incorporated in the type design.

#### **4. Dimensions**

Overall Length: 21.58m (70 feet, 9.6 inches)

Overall Span: 22.8m (74 feet, 9.5 inches)

Overall Height: 7.21 m(23 feet, 8.0 inches)

Refer to the SD3-60 Aircraft Maintenance Manual 360/MM Chapter 6 for details of other principal dimensions.



## 5. Engine

### 5.1. Model (See NOTE 1 and NOTE 2)

Two Pratt & Whitney of Canada Limited PT6A-65R engines, or  
Two Pratt & Whitney of Canada Limited PT6A-65AR engines (post SB Mod 7543), or  
Two Pratt & Whitney of Canada Limited PT6A-67R engines (post SB Mod A8077)

### 5.2 Type Certificate

- EASA.IM.E.078 (Transport Canada Type Certificate E-12) (for -65R Model)
- Transport Canada Type Certificate E-12 (for 65AR Model)
- EASA.IM.E.008 (Transport Canada Type Certificate E-18) (for -67R Model)

5.3 Limitations - Refer to the applicable Engine Type Certificate Data Sheet (see 5.2 above)

## 6. Load factors

Operation is limited to normal flying manoeuvres. The maximum normal accelerations (load factors) which the structure has been designed to withstand without permanent deformation is +2.75G and -1.0G (with flaps retracted) and +2.0G and ZeroG (with flaps extended).

## 7. Propeller

### 7.1 Model

- Hartzell HC-B5MP-3C (-65R and -65AR engine) or
- Hartzel HC-A6A-3 (-67R engine; Mod No A8059)

### 7.2 Type Certificate

- FAA Type Certificate P44GL (HC-B5MP-3C)
- FAA Type Certificate P14NE (HC-A6A-3)

### 7.3 Number of blades

- 5 (Type M10876ASK; -65R and -65AR) or
- 6 (Type A10460E; -67R engine). See NOTE 16.

### 7.4 Diameter

- 281.94 cm (111 inches) maximum; 281.18 cm (110.7 ) minimum (Type M10876ASK)
- 274.32 cm (108 inches) maximum; 274 cm (107.875 inches) minimum (Type A10460E)

### 7.5 Sense of Rotation

- Anti-clockwise (looking aft)





## 8. Fluids

### 8.1 Fuel (See NOTE 3)

Fuels conforming to CPW 204 Specification; refer to PW (C) Service Bulletin 13044. The following fuels, approved fuels are to the latest issue of the following specifications, satisfy these requirements:

<b><u>United States</u></b>	<b><u>U.K.</u></b>	<b><u>Canadian</u></b>
ASTM D1655-70		
Jet A	None	CGSB 3.23
Jet A-1	Def Stan 91-91	CGSB 3.23
Jet B	D. Eng.R.D 2486	CGSB 3.22
MIL-T-5624, Grade JP-4	Def Stan 91-88	CGSB 3.22
MIL-T-5624, Grade JP-5	Def Stan 91-86	-
MIL-T-83133, Grade JP-8	Def Stan 91-87	-

### 8.2 Oil (See Note 4)

The approved oils for use in this particular installation conform to PWA specification No. 521, Synthetic Type II. For full list of approved brand oils refer to PW (C) Service Bulletin 13001 (-65R and -65AR engine) or PW (C) Service Bulletin 14001 (-67R engine).

<b>United States</b>	<b>U.K.</b>
MIL-L-23699	Aeroshell 500
Esso 2380	
Castrol 205	
B.P. Enerjet 51	

### 8.3 Coolant

Not applicable



## 9. Fluid capacities

### 9.1 Fuel (See NOTE 5(b))

	<b>Litres</b>	<b>Imperial Gallons</b>	<b>U.S. Gallons</b>
Total Usable	2182	480	576.4
Total Unusable	17.7	3.9	4.7
Total Capacity	2199.7	483.9	581.1

### 9.2 Oil (See NOTE 5(b) and 5(c))

	<b>Litres</b>	<b>Imperial Gallons</b>	<b>U.S. Gallons</b>
Left Tank	5.68	1.25	1.5
Right Tank	5.68	1.25	1.5
Total Usable	11.36	2.50	3.0
Total Unusable	15.13	3.33	4.0
Total Capacity	26.49	5.83	7.0

### 9.3 Coolant system capacity

Not applicable

## 10. Air Speeds (all speed are specified as IAS)

VMO (Maximum Operating) 196 Kts

VA (Manoeuvring) - 7,257 kg (16,000 lbs) 129 Kts  
- 11,999 kg (26,453 lbs) 160 Kts

### VFE (Flaps Extended)

- 5° Flaps 150 Kts (See Note 6)  
- 15° Flaps 145 Kts  
- 30° Flaps 135 Kts

VMCG (Minimum Control Speed Ground) 82 Kts (15° Flaps)

VMCA (Minimum Control Speed Air) 83 Kts (15° Flaps)

VMCL (Minimum Control Speed Landing) 88 Kts (30° Flaps)

VLO (Landing Gear Operating) 150 Kts

VLE (Landing Gear Extended) 162 Kts



#### 11. Flight Envelope - Maximum Operating Altitude

20,000 feet (when supplemental oxygen and equipment is provided for the crew and passengers in accordance with the applicable operating rules).

#### 12. Approved Operations Capability

The aeroplane is eligible for the following kinds of operation when the appropriate instruments and equipment required by the applicable operating regulations is installed and serviceable:

- Carriage of passengers
- Carriage of cargo
- VFR
- IFR day and night
- Extended over-water flight

The aeroplane is approved for ditching using the recommended procedures specified in Section 3 of the applicable Flight Manual.

The aeroplane may be flown into known or forecast icing conditions provided that the required powerplant and airframe ice protection equipment is installed and the systems are serviceable. See NOTE 7.

#### 13. Maximum Masses

Maximum Ramp Weight: 12,044 kg (26,553 lbs)

Maximum Takeoff Weight: 11,999 kg (26,453 lbs)

Maximum Landing Weight: 11,839 kg (26,100 lbs)

SD3-60 aeroplanes incorporating Short Brothers CMC Mod. A8096 may be operated at the following maximum weights:

Maximum ramp weight 12,337 kg (27,200 lbs)

Maximum takeoff weight 12,292 kg (27,100 lbs)

Maximum landing weight 12,020 kg (26,500 lbs)

#### 14. Centre of Gravity Range

Refer to the centre of gravity limitations as published in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual (AFM). Refer to AFM listing in Section B.IV.1 of this TCDS. Note: The forward C.G. limits that must be observed will vary depending on the operating weight of the aeroplane.

#### 15. Datum

The C.G. datum is at fuselage station 236 on the center line of aircraft and is marked on the underside of the fuselage on an engraved plate.



## 16. Control surface deflections

Elevators	$22 \pm \frac{1}{2}^\circ$ up	$12 +0^\circ / - \frac{1}{4}^\circ$ down
Elevator trim tab	$7^\circ \pm 1\frac{1}{4}^\circ$ up	$13^\circ \pm 1\frac{1}{4}^\circ$ down

Rudder	$21^\circ \pm \frac{1}{2}^\circ$ left and right
Rudder trim tab	$2 \frac{1}{4}^\circ \pm \frac{1}{4}^\circ$ biased to left with rudder and trim control neutral
Rudder trim tab	$12 \frac{1}{2} \pm \frac{3}{4}^\circ$ left and right from biased position

Ailerons	$27 \frac{3}{4}^\circ \pm \frac{1}{4}^\circ$ up	$14 \frac{3}{4}^\circ \pm \frac{1}{4}^\circ$ down
Aileron trim tab	$8\frac{1}{2}^\circ \pm \frac{1}{2}^\circ$ up and down	

NOTE: Both Ailerons droop  $3^\circ \pm \frac{1}{4}^\circ$  with control wheel neutral.

The aileron angles are measured from the drooped position. See NOTE 12.

All other angles are measured from the neutral position.

Flaps inner and outer: (\* See NOTE 6).

Nominal –  $0^\circ$  En-route, all engines operating

$5^\circ$  Down - Enroute, one engine inoperative and take-off \*

$15^\circ$  Down – Take-off and approach

$30^\circ$  Down - Landing

## 17. Levelling Means

Levelling is established using a straight edge and clinometer on two sets of datum points, one lateral, the other longitudinal.

The lateral datum points are the two seat rails on the floor of the passenger compartment at the front spar (Stn.274.17).

The longitudinal datum points are on the left side of the fuselage outside skin at Stn. 255 and 335.

Holes in the fuselage skin at these points are normally plugged by rubber blanking grommets. When required for levelling, the grommets are withdrawn and two special datum pins are inserted.

## 18. Minimum Flight Crew

2 pilots are required.

## 19. Maximum Passenger Seating Capacity

39 passenger seats with an approved seating configuration.

Note: The SD3-60 has been certificated to carry a maximum of 43 occupants, including crew.

A supernumerary seat is installed in the flight deck.



## 20. Baggage/ Cargo Compartments

The SD3-60 incorporates a forward baggage compartment and an aft baggage compartment. Both compartments were initially certificated as meeting the requirements applicable to a Class D cargo compartment. See NOTE 8.

Forward Baggage Compartment: Maximum load is 227 kg (500 lbs)

Aft Baggage Compartment: Maximum load is 408 kg (900 lbs)

Baggage and/or cargo must be loaded in compliance with the compartment loading limitations specified in Section 2 of the applicable approved Flight Manual, supplemented by the Weight and Balance Manual. See NOTE 9.

## 21. Wheels and Tyres (See NOTE 11)

The approved wheels and tyres are specified in the Illustrated Part Catalogue 360/IPC, Chapter 32-40.

Tyre Inflation data is defined in the Aircraft Maintenance Manual, Chapter 12-10-32.

Tyre wear limitations are defined in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual. Refer to AFM listing in Section B.IV.1 of this TCDS.

## 22. (Reserved)



## B.IV. Operating and Service Instructions

### 1. Flight Manual

The following are the recognised approved Flight Manual publications:

For EU operators, the Variant 100 AFM is the applicable AFM to be used.

**FLIGHT MANUAL:** The limitations, recommended procedures and performance information required to meet the relevant requirements are contained in the following CAA approved Flight Manuals.

Aircraft Type	Variant		ENGINE TYPE	Doc. No.
SD3-60	100	CAA (UK)	PT6A-65R	SB 4.2
			PT6A-65AR	SB 4.7
			PT6A-67R	SB 4.9
	200	FAA (USA)	PT6A-65R	SB 4.3
PT6A-65AR			SB 4.6	
300	DOT (Canada)	PT6A-67R	SB 4.8	
		PT6A-65R	SB 4.4	
400	LBA (Germany)	PT6A-65AR	SB 4.12	
		PT6A-67R	SB 4.9	

The following Flight Manuals are not approved by the CAA.

Aircraft Type	Variant		ENGINE TYPE	Doc. No.
SD3-60	500	DOT (Australia)	PT6A-65AR	SB 4.5
			PT6A-65AR	SB 4.11
			PT6A-67R	SB 4.10

### 2. Maintenance Manual

SD3-60 Maintenance Manual (360/MM)

SD3-60 Maintenance Programme (360/MP)

Note: The above publications were created in accordance with the applicable requirements of BCAR, Section A, Chapter A6-2 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers Limited.

The Maintenance Programme constitutes a Manufacturers Recommended Maintenance Programme as derived using modified MSG-2 methodology and has been accepted by the CAA (UK) and FAA as the equivalent to the MRB Report for the SD3-60 aircraft.

Subsequent amendments to these publications have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.



### 3. Structural Repair Manual

#### SD3-60 Structural Repair Manual (360/SRM)

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A6-2 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers Limited.

Subsequent amendments to this publication have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.

### 4. Weight and Balance Manual

#### SD3-60 Weight and Balance Manual (360/WBM/ )

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-1 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers Limited.

At time of initial delivery, for each specific aircraft serial number, weight and balance data will have been issued by the manufacturer, Short Brothers and Harland Limited.

### 5. Illustrated Parts Catalogue

#### SD3-30 Illustrated Part Catalogue (SD3/IPC/001)

Note: The above publication was created and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers Limited.

Subsequent amendments to this publication have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.



## B.V. Notes

### NOTE 1.

The following are the approved National Variants as relating to the approved AFM documents for the SD3-60 aircraft.

Type	National Register	Variant	AFM Document	Engine Type
SD3-60	UK	100	SB 4.2	PT6A-65R
	US	200	SB 4.3	PT6A-65R
	Canada	300	SB 4.4	PT6A-65R
	Australia	500	SB 4.5	PT6A-65R
	US	200	SB 4.6	PT6A-65AR
	UK	100	SB 4.7	PT6A-65AR
	Canada	300	SB 4.12	PT6A-65AR
	Australia	500	SB 4.11	PT6A-65AR
	US	200	SB 4.8	PT6A-67R
	UK	100	SB 4.9	PT6A-67R
	Germany	400	SB 4.9	PT6A-67R
	Australia	500	SB 4.10	PT6A-67R

### NOTE 2.

On SD3-60 Airplanes:

A. 2 Pratt and Whitney aircraft of Canada Limited Model PT6A-65AR engines may be installed in lieu of the Model PT6A-65R engines in accordance with Short Brothers PLC Modification 7543. Shorts Service Bulletin Numbers SD360-51-03 and SD360-71-09 refer to the subject.

B. 2 Pratt and Whitney aircraft of Canada Limited Model PT6A-67R engines may be installed in accordance with Short Brothers PLC CMC Mod No. A8077.

### NOTE 3.

Only the following fuel anti-icing additives are approved for use with the specified fuels provided that the concentration does not exceed 0.15% by volume.

U.S.A.	CANADA	U.K.
MIL-I-27686E	3-GP-526a	Def Stan 68-252

### NOTE 4.

The mixing of oils to different specifications is not permitted.





NOTE 5.

(a) Current weight and balance report, including list of equipment included in certificated empty weight, and loading instructions when necessary must be in each aircraft at the time of original certification.

(b) Unusable fuel and system oil and all hydraulic fluid, must be included in the certified empty weight.

(c) System oil is the amount of oil required to fill the oil system and tanks up to its normal level. Dipstick readings calibrated in U.S. quarts indicate the quantity required to fill the tank to normal level, i.e. 1 U.S. Quart (0.833 Imperial quarts) below maximum level.

NOTE 6.

Aeroplane AFMs applicable to PT6A-65R engined aircraft incorporate performance data for an additional flap setting of 5° for take-off.

NOTE 7.

Compliance has been demonstrated for operation into known or predicted icing conditions for airplanes that have Goodrich de-icing boots installed on the leading edges of the wing and tailplane. SD3-60 aeroplanes with airframe de-icing provisions removed in accordance with Short Brothers CMC Mod. 7914 are not approved for flight in icing conditions.

NOTE 8.

SD3-60 aeroplanes incorporating Short Brothers CMC Modification No A8703, originally approved to satisfy the requirements of 14 CFR Part 121.314(c), meet the requirements applicable to a Class C cargo compartment.

NOTE 9.

The current Weight and Balance Report, including list of equipment included in certified empty weight, and loading instructions when necessary, must be in each aircraft at the time of original certification and at all times thereafter.

NOTE 10.

On SD3-60 aeroplanes incorporating Short Brothers CMC Mod 7260 the Maximum Continuous Engine Rating is available up to a Temperature of 101°F and the Maximum Continuous Inter Turbine Temperature Limit is increased to 835°C (1535°F).  
All other Engine Ratings and Limits remain unchanged.

NOTE 11.

SD3-60 aeroplanes incorporating Short Brothers CMC Mod 7734 "Installation of a Low Pressure Tyre", must be operated in accordance with the limitations and procedures detailed in the Flight Manual.



NOTE 12.

SD3-60 aeroplanes incorporating Short Brothers CMC Mod A8064 have the following aileron control surfaces movement:

Aileron  $27 \frac{1}{4}^{\circ} \pm \frac{1}{2}^{\circ}$  up  $14 \frac{1}{4}^{\circ} \pm \frac{1}{2}^{\circ}$  down

Aileron Trim  $8 \frac{1}{2}^{\circ} \pm 1^{\circ}$  up  $8 \frac{1}{2}^{\circ} \pm 1^{\circ}$  down

NOTE 13.

On SD3-60 aeroplanes Cambered Struts may be installed in accordance with Short Brothers PLC CMC Mod No. 7784.

NOTE 14.

SD3-60 aeroplanes incorporating Short Brothers CMC Modification A8123, "Installation of a Collins APS-65 Autopilot", must be operated in accordance with the limitations and procedures detailed in the Airplane Flight Manual.

NOTE 15.

SD3-60 aeroplanes incorporating Short Brothers CMC Modification A8123 and A8283 which install a Collins APS65 Autopilot without Yaw Damper installation, must be operated in accordance with the limitations and procedures detailed in the Airplane Flight Manual.

NOTE 16.

SD3-60 aeroplanes using HC-A6A-3 propellers are approved for operation with the following blade models installed.

A10460E An internal de-icing element only is installed.

A10460K An internal de-icing element only is installed.

A10460EK An external de-icing element is installed under Hartzell Service Instruction No 187.

Blade model A10460E must not be intermixed with A10460EK or A10460K models on the same propeller.

Blade models A10460K and A10460EK may be intermixed on the same propeller as long as their weights (for balance) are compatible.

NOTE 17.

The service life limitations applicable to the airframe, specified structural parts with defined life limitations and specified system parts with life limitations are defined in the SD3-60 Maintenance Manual Chapter 5.

NOTE 18.

All placards listed in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual must be installed in their specified locations.

Refer to AFM listing in Section B.IV.1 of this TCDS.



## **SECTION C: SD3-SHERPA**

### **C.I. General**

#### 1. Type/ Model/ Variant

1.1 SD3

1.2 SD3-SHERPA

1.3 200 (See Note 1)

#### 2. Airworthiness Category

Transport Category (originally)

Large Aeroplane

#### 3. Manufacturer

Short Brothers PLC

Airport Road

Belfast

BT3 9DZ

Northern Ireland

#### 4. EASA Type Certification Application Date

Original date of application to CAA (UK):

Date not known.

Note: This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.

#### 5. State of Design Authority

Transport Canada (TCCA)

#### 6. State of Design Authority Type Certificate Date

The original State of Design Authority was the UK Civil Aviation Authority (CAA).

Type Certificate No. BA 11 was issued by the UK CAA.

SD3-SHERPA was approved 26<sup>th</sup> July 1990.

Note: This aircraft type was accepted as a grandfathered product when State of Design responsibility transferred to EASA on 28<sup>th</sup> September 2003 when the EU Regulations came into force.

#### 7. EASA Type Certification Date

Not applicable; refer to C.I.6 above.

This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.

### **C.II. EASA Certification Basis**

#### 1. Reference Date for determining the applicable requirements

Original date of application to CAA (UK):



Date not known

## 2. Airworthiness Requirements

With reference to Airworthiness Approval Note AAN 21656 dated 26th July 1990:

BCAR Section D Issue 14 dated 1 December 1981

BCAR Section J Issue 3 dated 15 September 1966

BCAR Section R Issue 4 dated 10 April 1974

With the exceptions of:-

- BCAR Blue Paper No 578 dated 16 March 1979
- BCAR Blue Paper No 670 dated 30 May 1979
- BCAR Blue Paper No 671 dated 9 May 1980
- BCAR Blue Paper No 705 dated 11 February 1981
- BCAR Blue Paper No 710 dated 16 March 1979
- BCAR Blue Paper No 723 dated 22 May 1981

Compliance with BCAR Blue Paper No 671 has been established with respect to the Rear Ramp Door.

## 3. Special Conditions

None documented.

## 4. Exemptions

None documented.

## 5. (Reserved) Deviations

None documented.

## 6. Equivalent Safety Findings

A Direct Vision Window as required by Chapter D4-2 paragraph 3.1.2 is not fitted. The SD3-60 is accepted on the grounds of equivalent safety, and the SD3-SHERPA installation is identical. (CAA Letter 9/30/10GJ dated 12 August 1982).

## 7. Environmental Protection

Noise: ICAO Annex 16, Volume I

For further details see EASA TCDSN: EASA.IM.A.665.

Fuel venting: ICAO Annex 16, Volume II



### **C.III. Technical Characteristics and Operational Limitations**

#### **1. Type Design Definition**

The CAA (UK) Type Design is defined on Drawing SD3-00-20621 Issue P, introduced under authority of Modification No K2009.

Note: The UK type design standard was accepted as a grandfathered product when State of Design responsibility transferred to EASA on 28<sup>th</sup> September 2003.

#### **2. Description**

The SD3-SHERPA is a twin engine, unpressurised, large aeroplane designed and manufactured by Short Brothers PLC, Belfast, Northern Ireland.

The SD3-SHERPA is a strut-braced, high wing aeroplane, incorporating a tailplane with twin fins and rudders and a retractable tricycle (nosewheel) undercarriage.

The aircraft, as originally type approved by the UK Civil Aviation Authority, has a maximum take-off weight of 11,612 kg (25,600 lbs) and is powered by two Pratt and Whitney of Canada PT6A-65AR turbo-prop engines.

The SD3-SHERPA was principally designed as a utility aircraft for the US Army and is adaptable for use in a variety of roles but is principally used for troop and freight transport.

#### **3. Equipment**

Refer to SD3-SHERPA Equipment Summary SD3-SHERPA/EAS/001 for listings of the approved equipment which is incorporated in the type design.

#### **4. Dimensions**

Overall Length: 17.7 m (58 feet, 0.5 inch)

Overall Span: 22.4 m (74 feet, 9.9 inches)

Overall Height: 4.95 m (16 feet, 3 inches)

Refer to the SD3-SHERPA Aircraft Maintenance Manual SD3-SHERPA/MM Chapter 6 for details of other principal dimensions.

#### **5. Engine**

##### **5.1. Model**

2 Pratt and Whitney Canada Corp. (PW(C)) PT6A-65AR

5.2 Type Certificate – EASA.IM.E.078 (Transport Canada Type Certificate E-12)

5.3 Limitations - Refer to Engine Type Certificate Data Sheet EASA.IM.E.078 (Transport Canada Type Certificate E-12) (for all Models)

#### **6. Load factors**

Operation is limited to normal flying manoeuvres. The maximum normal accelerations (load factors) which the structure has been designed to withstand without permanent deformation is +2.78G and -1.0G (with flaps retracted) and +2.0G and ZeroG (with flaps extended).



## 7. Propeller

- 7.1 Model - 2 Hartzell reversible propellers Model HC-B5MP-3C
- 7.2 Type Certificate - FAA Type Certificate P44GL (EASA.IM.P.129)
- 7.3 Number of blades - 5, (Type M10876ASK)
- 7.4 Diameter –281.94cm (111.0 in.) maximum, 281.18cm (110.7 in.) minimum
- 7.5 Sense of Rotation - Anti-clockwise (looking aft)

## 8. Fluids

### 8.1 Fuel (See NOTE 2 for fuel additive information)

Fuels conforming to CPW 204 Specification; refer to PW (C) Service Bulletin 13044. The following fuels, approved fuels are to the latest issue of the following specifications, satisfy these requirements:

<b>United States</b>	<b>U.K.</b>	<b>Canadian</b>
ASTM D1655		
Jet A	None	CGSB 3.23
Jet A-1	Def Stan 91-91	CGSB 3.23
Jet B	D. Eng.R.D 2486	CGSB 3.22
MIL-T-5624L, Grade JP-4	Def Stan 91-88	CGSB 3.22
MIL-T-5624L, Grade JP-5	Def Stan 91-86	-
MIL-T-83133A, Grade JP-8	Def Stan 91-87	-

### 8.2 Oil (See NOTE 3)

The approved oils for use in this particular installation conform to PWA specification No. 521, Synthetic Type II. For full list of approved brand oils refer to PW (C) Service Bulletin 13001.

<b>United States</b>	<b>U.K.</b>
MIL-L-23699	Aeroshell 500 Esso 2380 Castrol 205 B.P. Enerjet 51

### 8.3 Coolant

Not applicable.

## 9. Fluid capacities

### 9.1 Fuel

<b>Usable</b>	<b>Litres</b>	<b>Imperial Gallons</b>
Forward Tank	1273	280
Aft Tank	1273	280
Total	2546	560

### 9.2 Oil

<b>Usable</b>	<b>Litres</b>	<b>Imperial Gallons</b>
Left Tank	5.68	1.25
Right Tank	5.68	1.25
Total Usable	11.36	2.50



9.3 Coolant system capacity  
Not applicable

10. Air Speeds

(all speed are specified as IAS)

V<sub>MO</sub> (Maximum Operating) 196 Kts

V<sub>A</sub> (Manoeuvring) - 7,121 kg (15,700 lbs) 124 Kts  
- 11,612 kg (25,600 lbs) 161 Kts

V<sub>FE</sub> (Flaps Extended)

- 10° Flaps 145 Kts  
- 15° Flaps 140 Kts  
- 35° Flaps 130 Kts

V<sub>MCG</sub> (Minimum Control Speed Ground) 80 Kts

V<sub>MCA</sub> (Minimum Control Speed Air) 80 Kts (10° Flaps)  
80 Kts (15° Flaps)

V<sub>MCL</sub> (Minimum Control Speed Landing) 80 Kts

V<sub>LO</sub> (Landing Gear Operating) 150 Kts

V<sub>LE</sub> (Landing Gear Extended) 160 Kts

11. Flight Envelope – Maximum Operating Altitude  
20,000 ft.

12. Approved Operations Capability

The aeroplane is eligible for the following kinds of operation when the appropriate instruments and equipment required by the applicable operating regulations is installed and serviceable:

- Carriage of passengers
- Carriage of cargo
- VFR
- IFR day and night
- Extended over-water flight

The aeroplane is approved for ditching using the recommended procedures specified in Section 3 of the applicable Flight Manual.

The aeroplane may be flown into known or forecast icing conditions provided that the required powerplant and airframe ice protection equipment is installed and the systems are serviceable. See Note 4.

O.A.T. limits

-40°C to 50°C for Take-off and Landing

-45°C to 50°C for En-Route Operations



### 13. Maximum Masses

Maximum Ramp Weight: 11,657 kg (25,700 lbs)

Maximum Takeoff Weight: 11,612 kg (25,600 lbs)

Maximum Landing Weight: 11,385 kg (25,100 lbs)

### 14. Centre of Gravity Range

Refer to Aircraft Flight Manual, as listed in Approved Publications.

### 15. Datum

The C.G. datum is at fuselage Station 200 on the center line of aircraft and is marked by a datum plate on the underside of the aircraft.

### 16. Control surface deflections

Elevator	$22^{\circ} \pm \frac{1}{2}^{\circ}$ up	$14 \frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Elevator trim tab	$9^{\circ} \pm 1^{\circ}$ up	$14 \frac{1}{2}^{\circ} \pm 1^{\circ}$ down
Rudder	$29^{\circ} \pm 1^{\circ}$ left	$29^{\circ} \pm 1^{\circ}$ right
Left rudder trim tab	$13 \frac{1}{2}^{\circ} \pm 1^{\circ}$ left	$13 \frac{1}{2}^{\circ} \pm 1^{\circ}$ right
Right rudder trim tab	$22^{\circ} \pm 1 \frac{1}{2}^{\circ}$ left	$22 \frac{1}{2}^{\circ} \pm 1 \frac{1}{2}^{\circ}$ right
Left aileron	$22 \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ up	$13 \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Right aileron	$23 \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ up	$12 \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Aileron trim tab	$13^{\circ} \pm 1^{\circ}$ up	$13^{\circ} \pm 1^{\circ}$ down

NOTE: Aileron reflex  $1 \frac{1}{4}^{\circ} \pm \frac{1}{4}^{\circ}$

The above angles are all measured from the neutral position.

Flaps inner and outer:

Nominal –  $0^{\circ}$  En-route, all engines operating

$10^{\circ}$  Down - Take-off, Single Engine Enroute

$15^{\circ}$  Down - Takeoff and normal approach; discontinued approach

$35^{\circ}$  Down - Landing

### 17. Levelling Means

Inclinometer with a straight edge placed on pegs inserted in the holes in the two levelling plates on the fuselage port side at Stn.212 and Stn.291.12.

The lateral level is checked using the two floor seat rails at the front spar frame in the passenger compartment at Stn 238.17.

### 18. Minimum Flight Crew

2 (pilot and co-pilot)

### 19. Maximum Passenger Seating Capacity

30 passenger seats in the main cabin area with an approved seating configuration.

Note: The SD3-SHERPA has been certificated to carry a maximum of 33 occupants, including crew.





## 20. Baggage/ Cargo Compartments

Baggage must be loaded in accordance with the Approved Weight and Balance Manual, ref: SD3-SHERPA/WB.

Cargo must be loaded in accordance with the Approved Weight and Balance Manual, ref: SD3-SHERPA/WB.

## 21. Wheels and Tyres

The approved wheels and tyres are specified in the Illustrated Part Catalogue SD3-SHERPA/IPC, Chapter 32-40.

Tyre Inflation data is defined in the Aircraft Maintenance Manual, Chapter 12-10-32.

Tyre wear limitations are defined in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual. Refer to Note 1.

## 22. (Reserved)



## C.IV. Operating and Service Instructions

### 1. Flight Manual

The following is the only recognised approved Flight Manual publication:

Type	National Register	Variant	AFM Document
SD3-SHERPA	US	200	SB 5.2

### 2. Maintenance Manual

SD3-SHERPA Maintenance Manual (SD3-SHERPA/MM )

SD3-SHERPA Maintenance Programme (SD3-SHERPA/MP)

Note: The above publications were created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-3 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

The Maintenance Programme constitutes a Manufacturers Recommended Maintenance Programme as derived using modified MSG-2 methodology as was grandfathered from the development of the SD3-30 and SD3-60 recommended maintenance programmes.

Subsequent amendments to these publications have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.

### 3. Structural Repair Manual

SD3-SHERPA Structural Repair Manual (SD3-SHERPA/SRM)

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-3 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

Subsequent amendments to this publication have been approved under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.

### 4. Weight and Balance Manual

SD3-SHERPA Weight and Balance Manual (SD3-SHERPA/WB/ )

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-1 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

At time of initial delivery, for each specific aircraft serial number, weight and balance data will have been issued by the manufacturer, Short Brothers PLC.

### 5. Illustrated Parts Catalogue

SD3-SHERPA Illustrated Part Catalogue (SD3-SHERPA/IPC)

Note: The above publication was created and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

Subsequent amendments to this publication have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.



## C.V. Notes

### NOTE 1.

The following is the only approved AFM document for the SD3-SHERPA aircraft.

Type	National Register	Variant	AFM Document	Engine Type
SD3-SHERPA	US	200	SB 5.2	PT6A-65AR

### NOTE 2.

Only the following fuel anti-icing additives are approved for use with the specified fuels provided that the concentration does not exceed 0.15% by volume.

U.S.A.	CANADA	U.K.
MIL-I-27686E	3-GP-526a	Def Stan 68-252

### NOTE 3.

The mixing of oils to different specifications is not permitted.

### NOTE 4.

Compliance has been demonstrated for operation into known or predicted icing conditions for airplanes that have Goodrich de-icing boots installed on the leading edges of the wing and tailplane.

### NOTE 5.

(a) Current weight and balance report, including list of equipment included in certificated empty weight, and loading instructions when necessary must be in each aircraft at the time of original certification and at all times thereafter.

(b) Unusable fuel and system oil and all hydraulic fluid, must be included in the certified empty weight.

(c) System oil is the amount of oil required to fill the oil system and tanks up to its normal level. Dipstick readings calibrated in U.S. quarts indicate the quantity required to fill the tank to normal level, i.e. 1 U.S. Quart (0.833 Imperial quarts) below maximum level.

### NOTE 6.

The service life limitations applicable to the airframe, specified structural parts with defined life limitations and specified system parts with life limitations are defined in the SD3-SHERPA Maintenance Manual Chapter 5.

### NOTE 7.

All placards listed in the Limitations Section (Section 2) of the approved Aircraft Flight Manual must be installed in their specified locations.



## **SECTION D: SD3-60-SHERPA**

### **D.I. General**

#### 1. Type/ Model/ Variant

1.1 SD3

1.2 SD3-60-SHERPA

1.3 200 (See NOTE 2)

#### 2. Airworthiness Category

Transport Category (originally)

Large Aeroplane

#### 3. Manufacturer

Short Brothers PLC

Airport Road

Belfast

BT3 9DZ

Northern Ireland

#### 4. EASA Certification Application Date

Original date of application to CAA (UK) 8<sup>th</sup> October 1993.

Note: This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.

#### 5. State of Design Authority

Transport Canada (TCCA)

#### 6. State of Design Authority Type Certificate Date

The original State of Design Authority was the UK Civil Aviation Authority (CAA).

Type Certificate No. BA 11 was issued by the UK CAA.

SD3-60-SHERPA was approved 25<sup>th</sup> April 1996.

#### 7. EASA Type Certification Date

Not applicable; refer to D.I.6 above.

This initial EASA TCDS has been created to recognise the transfer of State of Design responsibility to TCCA 28-06-2019.



## **D.II. EASA Certification Basis**

### 1. Reference Date for determining the applicable requirements

Original date of application to CAA (UK) 8<sup>th</sup> October 1993.

### 2. Airworthiness Requirements (See Note 1)

With reference to Airworthiness Approval Note AAN 24312 dated 25th April 1996:

BCAR Section D Issue 14 dated 1 December 1981

BCAR Section J Issue 3 dated 15 September 1966

BCAR Section R Issue 4 dated 10 April 1974 With the exceptions of:-

- BCAR Blue Paper No 578 dated 16 March 1979
- BCAR Blue Paper No 670 dated 30 May 1979
- BCAR Blue Paper No 671 dated 9 May 1980
- BCAR Blue Paper No 705 dated 11 February 1981
- BCAR Blue Paper No 710 dated 16 March 1979
- BCAR Blue Paper No 723 dated 22 May 1981

Compliance with BCAR Blue Paper No 671 has been established with respect to the Rear Ramp Door.

### 3. Special Conditions

None documented.

### 4. Exemptions

None documented.

### 5. (Reserved) Deviations

None documented.

### 6. Equivalent Safety Findings

A Direct Vision Window as required by Chapter 04-2 paragraph 3.1.2 is not fitted. The SD3-60 is accepted on the grounds of equivalent safety, and the SD3-60-SHERPA installation is identical. (CAA Letter 9/30/10/GJ dated 12 August 1982).

### 7. Environmental Protection

Noise: ICAO Annex 16, Volume I

For further details see EASA TCDSN A.665.

Fuel venting: ICAO Annex 16, Volume II



## D.III. Technical Characteristics and Operational Limitations

### 1. Type Design Definition

The CAA (UK) Type Design standard is defined on Drawing SD3-00-25010 Issue C and in document reference number AR/SG/02 Issue 1, introduced under authority of Modification No K6001.

Note: The UK type design standard was accepted as a grandfathered product when State of Design responsibility transferred to EASA on 28<sup>th</sup> September 2003.

### 2. Description

The SD3-60-SHERPA is a twin engine, unpressurised, large aeroplane designed and manufactured by Short Brothers PLC, Belfast, Northern Ireland.

The SD3-60-SHERPA design specification is based on the in-service SD3-SHERPA but is derived from the SD3-60 variant of the SD3 series of commuter passenger aircraft by modification and reconfiguration of pre-owned aircraft. The intent being that the SD3-60-SHERPA is identical in all relevant respects to the SD3-SHERPA. The major changes to the SD3-60 introduced under this modification process is to cut the nose and tail sections from the main portion of the fuselage, removing a 36 inches

plug or extension installed for the SD3-60 from the forward fuselage. The nose section is then re-mated to the main fuselage section and a new SD3-30 tail section, fabricated at De-Havilland in Canada, is mated to the aft fuselage section.

The SD3-60-SHERPA is a strut-braced, high wing aeroplane, incorporating a tailplane with twin fins and rudders and a retractable tricycle (nosewheel) undercarriage.

The aircraft, as originally type approved by the UK Civil Aviation Authority, has a maximum take-off weight of 11,612 kg (25,600 lbs) and is powered by two Pratt and Whitney of Canada PT6A-65AR turbo-prop engines.

The SD3-60-SHERPA was principally designed as a utility aircraft for the US Army and is adaptable for use in a variety of roles but is principally used for troop and freight transport.

### 3. Equipment

Refer to SD3-60-SHERPA Equipment Summary SD3-60-SHERPA/EAS/001 for listings of the approved equipment which is incorporated in the type design.

### 4. Dimensions

Overall Length: 17.7 m (58 feet, 0.5 inch)

Overall Span: 22.8 m (74 feet, 9.9 inches)

Overall Height: 4.95 m (16 feet, 3 inches)

Refer to the SD3-60-SHERPA Aircraft Maintenance Manual SD3-SHERPA/AMM Chapter 6 for details of other principal dimensions.

### 5. Engine

#### 5.1. Model

2 Pratt and Whitney Canada Corp. (PW(C)) PT6A-65AR

5.2 Type Certificate – EASA.IM.E.078 (Transport Canada Type Certificate E-12)

5.3 Limitations - Refer to Engine Type Certificate Data Sheet EASA.IM.E.078 (Transport Canada Type Certificate E-12) (for all Models)



## 6. Load factors

Operation is limited to normal flying manoeuvres. The maximum normal accelerations (load factors) which the structure has been designed to withstand without permanent deformation is +2.78G and -1.0G (with flaps retracted) and +2.0G and ZeroG (with flaps extended).

## 7. Propeller

### 7.1 Model

7.1 Model - 2 Hartzell reversible propellers Model HC-B5MP-3C

7.2 Type Certificate - FAA Type Certificate P44GL (EASA.IM.P.129)

7.3 Number of blades - 5, (Type M10876ASK)

7.4 Diameter –281.94 cm (111.0 in.) maximum, 281.18 cm (110.7 in.) minimum

7.5 Sense of Rotation - Anti-clockwise (looking aft)

## 8. Fluids

### 8.1 Fuel (See NOTE 3 for fuel additive information)

Fuels conforming to CPW 204 Specification; refer to PW(C) Service Bulletin 13044. The following fuels, approved fuels are to the latest issue of the following specifications, satisfy these requirements:

<b>United States</b>	<b>U.K.</b>	<b>Canadian</b>
ASTM D1655		
Jet A	None	CGSB 3.23
Jet A-1	Def Stan 91-91	CGSB 3.23
Jet B	D. Eng.R.D 2486	CGSB 3.22
MIL-T-5624L, Grade JP-4	Def Stan 91-88	CGSB 3.22
MIL-T-5624L, Grade JP-5	Def Stan 91-86	-
MIL-T-83133A, Grade JP-8	Def Stan 91-87	-

### 8.2 Oil (See NOTE 4)

The approved oils for use in this particular installation conform to PWA specification No. 521, Synthetic Type II. For full list of approved brand oils refer to PW (C) Service Bulletin 13001.

<b>United States</b>	<b>U.K.</b>
MIL-L-23699	Aeroshell 500 Esso 2380 Castrol 205 B.P. Enerjet 51

### 8.3 Coolant

Not applicable.



## 9. Fluid capacities

### 9.1 Fuel

<b>Usable</b>	<b>Litres</b>	<b>Imperial Gallons</b>
Forward Tank	1273	280
Aft Tank	1273	280
Total	2546	560

### 9.2 Oil

<b>Usable</b>	<b>Litres</b>	<b>Imperial Gallons</b>
Left Tank	5.68	1.25
Right Tank	5.68	1.25
Total Usable	11.36	2.50

### 9.3 Coolant system capacity

Not applicable

## 10. Air Speeds (all speed are specified as IAS)

V<sub>MO</sub> (Maximum Operating) 196 Kts

V<sub>A</sub> (Manoeuvring) - 7,121 kg (15,700 lbs) 126 Kts  
- 11,612 kg (25,600 lbs) 163 Kts

### V<sub>FE</sub> (Flaps Extended)

- 10° Flaps 145 Kts  
- 15° Flaps 140 Kts  
- 35° Flaps 130 Kts

V<sub>MCG</sub> (Minimum Control Speed Ground) 80 Kts

V<sub>MCA</sub> (Minimum Control Speed Air) 80 Kts (10° Flaps)

80 Kts (15° Flaps)

V<sub>MCL</sub> (Minimum Control Speed Landing) 80 Kts

V<sub>LO</sub> (Landing Gear Operating) 150 Kts

V<sub>LE</sub> (Landing Gear Extended) 160 Kts

## 11. Maximum Operating Altitude

Maximum Operating Altitude is 20,000 ft.

## 12. Approved Operations Capability

The aeroplane is eligible for the following kinds of operation when the appropriate instruments and equipment required by the applicable operating regulations is installed and serviceable:

Carriage of passengers

- Carriage of cargo
- VFR
- IFR day and night
- Extended over-water flight

The aeroplane is approved for ditching using the recommended procedures specified in Section 3 of the applicable Flight Manual.





The aeroplane may be flown into known or forecast icing conditions provided that the required powerplant and airframe ice protection equipment is installed and the systems are serviceable. See NOTE 5.

#### O.A.T. limits

-40°C to 50°C for Take-off and Landing

-45°C to 50°C for En-Route Operations

#### 13. Maximum Masses

Maximum Ramp Weight: 11,657 kg (25,700 lbs)

Maximum Takeoff Weight: 11,612 kg (25,600 lbs)

Maximum Landing Weight: 11,385 kg (25,100 lbs)

#### 14. Centre of Gravity Range

Refer to Aircraft Flight Manual, as listed in Approved Publications.

#### 15. Datum

The C.G. datum is at fuselage Station 200 on the center line of aircraft and is marked by a datum plate on the underside of the aircraft.

#### 16. Control surface deflections

Elevator	$22^{\circ} \pm \frac{1}{2}^{\circ}$ up	$14 \frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Elevator trim tab	$9^{\circ} \pm 1^{\circ}$ up	$14 \frac{1}{2}^{\circ} \pm 1^{\circ}$ down
Rudder	$29^{\circ} \pm 1^{\circ}$ left	$29^{\circ} \pm 1^{\circ}$ right
Left rudder trim tab	$13 \frac{1}{2}^{\circ} \pm 1^{\circ}$ left	$13 \frac{1}{2}^{\circ} \pm 1^{\circ}$ right
Right rudder trim tab	$22^{\circ} \pm 1 \frac{1}{2}^{\circ}$ left	$22 \frac{1}{2}^{\circ} \pm 1 \frac{1}{2}^{\circ}$ right
Left aileron	$22 \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ up	$13 \frac{1}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Right aileron	$23 \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ up	$12 \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$ down
Aileron trim tab	$13^{\circ} \pm 1^{\circ}$ up	$13^{\circ} \pm 1^{\circ}$ down

NOTE: Aileron reflex  $1 \frac{1}{4}^{\circ} \pm \frac{1}{4}^{\circ}$

The above angles are all measured from the neutral position.

Flaps inner and outer:

Nominal – 0° En-route, all engines operating

10 ° Down - Take-off, Single Engine Enroute

15 ° Down - Takeoff and normal approach; discontinued approach

35 ° Down - Landing



#### 17. Levelling Means

Inclinometer with a straight edge placed on pegs inserted in the holes in the two levelling plates on the fuselage port side at Stn. 212 and Stn. 291.12.

The lateral level is checked using the two floor seat rails at the front spar frame in the passenger compartment at Stn 238.17.

#### 18. Minimum Flight Crew

2 (pilot and co-pilot)

#### 19. Maximum Passenger Seating Capacity

30 passenger seats in the main cabin area with an approved seating configuration.

Note: The SD3-60-SHERPA has been certificated to carry a maximum of 33 occupants, including crew.

#### 20. Baggage/ Cargo Compartments

Baggage must be loaded in accordance with the Approved Weight and Balance Manual, ref: SD3-60-SHERPA/WB.

Cargo must be loaded in accordance with the Approved Weight and Balance Manual, ref: SD3-60-SHERPA/WB.

#### 21. Wheels and Tyres

The approved wheels and tyres are specified in the Illustrated Part Catalogue SD3-60-SHERPA/IPC, Chapter 32-40.

Tyre Inflation data is defined in the Aircraft Maintenance Manual, Chapter 12-10-32.

Tyre wear limitations are defined in the Limitations Section (Section 2) of the applicable approved Aircraft Flight Manual. Refer to NOTE 2.

#### 22. (Reserved)



## D.IV. Operating and Service Instructions

### 1. Flight Manual

The following is the only recognised approved Flight Manual publication:

Type	National Register	Variant	AFM Document
SD3-60-SHERPA	US	200	SB 6.2

### 2. Maintenance Manual

SD3-60-SHERPA Maintenance Manual (SD3-SHERPA/AMM).

SD3-60-SHERPA Maintenance Programme (SD3-60-SHERPA/MP).

Note: The above publications were created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-3 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

The Maintenance Programme constitutes a Manufacturers Recommended Maintenance Programme as derived using modified MSG-2 methodology as was grandfathered from the development of the SD3-30 and SD3-60 recommended maintenance programmes.

Subsequent amendments to these publications have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.

### 3. Structural Repair Manual

SD3-60-SHERPA Structural Repair Manual (SD3-60-SHERPA/SRM)

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-3 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

Subsequent amendments to this publication have been approved under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.

### 4. Weight and Balance Manual

SD3-60-SHERPA Weight and Balance Manual (SD3-60-SHERPA/WB/ )

Note: The above publication was created in accordance with the applicable requirements of BCAR, Section A, Chapter A5-1 and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

At time of initial delivery, for each specific aircraft serial number, weight and balance data will have been issued by the manufacturer, Short Brothers PLC.

### 5. Illustrated Parts Catalogue

SD3-60-SHERPA Illustrated Part Catalogue (SD3-60-SHERPA/IPC)

Note: The above publication was created and the technical content was originally verified and approved under the CAA (UK) Design Approval Authority of Short Brothers PLC.

Subsequent amendments to this publication have been approved under the CAA (UK) Design Approval Authority of Short Brothers PLC or under the Design Organisation Approval privileges of Short Brothers PLC as will have been recorded on the Amendment List published with each revision.



## D.V. Notes

### NOTE 1.

The SD3-60-SHERPA design specification is based on the in-service SD3-SHERPA but derived from the SD3-60 variant of the SD3 series of commuter passenger aircraft by modification and reconfiguration of pre-owned aircraft.

The intent being that the SD3-60-SHERPA is identical in all relevant respects to the SD3-SHERPA.

### NOTE 2.

The following is the only approved AFM document for the SD3-SHERPA aircraft.

Type	National Register	Variant	AFM Document	Engine Type
SD3-60-SHERPA	US	200	SB 6.2	PT6A-65AR

### NOTE 3.

Only the following fuel anti-icing additives are approved for use with the specified fuels provided that the concentration does not exceed 0.15% by volume.

U.S.A.	CANADA	U.K.
MIL-I-27686E	3-GP-526a	Def Stan 68-252

### NOTE 4.

The mixing of oils to different specifications is not permitted.

### NOTE 5.

Compliance has been demonstrated for operation into known or predicted icing conditions for airplanes that have Goodrich de-icing boots installed on the leading edges of the wing and tailplane.

### NOTE 6.

(a) Current weight and balance report, including list of equipment included in certificated empty weight, and loading instructions when necessary must be in each aircraft at the time of original certification and at all times thereafter.

(b) Unusable fuel and system oil and all hydraulic fluid, must be included in the certified empty weight.

(c) System oil is the amount of oil required to fill the oil system and tanks up to its normal level. Dipstick readings calibrated in U.S. quarts indicate the quantity required to fill the tank to normal level, i.e. 1 U.S. Quart (0.833 Imperial quarts) below maximum level.

### NOTE 7.

The service life limitations applicable to the airframe, specified structural parts with defined life limitations and specified system parts with life limitations are defined in the SD3-60-SHERPA Maintenance Manual Chapter 5.



**NOTE 8.**

All placards listed in the Limitations Section (Section 2) of the approved Aircraft Flight Manual must be installed in their specified locations.



## SECTION ADMINISTRATIVE

### I. Acronyms & Abbreviations

### II. Type Certificate Holder Record

### III. Change Record

<b>Issue</b>	<b>Date</b>	<b>Changes</b>	<b>TC Issue No. &amp; Date</b>
Issue 01	28 June 2019	EASA validation of Transport Canada Civil Aviation (TCCA) Type Certificate A-117 Issue 8 (transfer from Short Brothers PLC to Viking Air Limited of BC Canada).	Initial Issue, 28 June 2019

-END-

