Civil Aviation Authority
United Kingdom

TYPE-CERTIFICATE DATA SHEET

UK.TC.E.00058

for

Trent XWB series engines

Type Certificate Holder

Rolls-Royce Deutschland Ltd & Co KG Eschenweg 11

Dahlewitz

15827 Blankenfelde-Mahlow Germany

Model(s):	Trent XWB-75 Trent XWB-79 Trent XWB-79B Trent XWB-84 Trent XWB-97
Issue:	1
Date of issue:	24 February 2023

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Section 1 General (All Models)

I. General

This Type-Certificate Data Sheet (TCDS) is the concise definition of the type-certificated product accepted

and or approved by the CAA in the UK for the affected types and models.

This TCDS includes:

1. Details of the type design that affect the TCDS that have been approved or accepted by the CAA in the UKCAA **from** 01 January 2021.

2. Details of the type design that affected the TCDS and were approved or accepted by EASA **before** 01 January 2021, and were incorporated into EASA TCDS EASA.E.111 at Issue 13 dated 22 May 2020 and are therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement

Section 2

I. General

1. Type / Variant / Model

Trent XWB / Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84, Trent XWB-97

2. Type Certificate Holder

Rolls-Royce Deutschland Ltd & Co KG

Eschenweg 11

Dahlewitz

15827 Blankenfelde-Mahlow Germany

Design Organisation Approval No.: EASA.21J.065

3. Manufacture

Rolls-Royce plc

4. Date of Application at EASA (Certificating Authority)

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	16 June 2008
Trent XWB-97:	11 March 2013

5.. Type Certification Date at EASA (Certification Authority)

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	07 February 2013
Trent XWB-97	31 August 2017

II. Certification Basis

1. Reference Date for determining the applicable airworthiness requirements

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	1 October 2010
Trent XWB-97	1 September 2014

2. State of Design Airworthiness Authority Type Certificate Data Sheet Number

EASA.E.111

3. State of Design Airworthiness Authority Certification Basis

Refer to TCDS EASA.E.111.

4. UK CAA Certification Basis

4.1 Airworthiness Standards

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	CS-E amendment 2, effective 18 December 2009 as issued by EASA Decision N°2009/18/R on 11 December 2009 CS-E 1040 "ETOPS" amendment 3, effective 23 December 2010 as issued by EASA Decision N°2010/015/R on 16 December 2010
Trent XWB-97	CS-E amendment 3, effective 23 December 2010 as issued by EASA Decision N°2010/015/R on 16 December 2010 CS-E 650 "Vibration Surveys" amendment 4, effective 12 March 2015 as issued by EASA Decision N° 2015/009/R on 12 March 2015

4.2. Special Conditions (SC)

None

4.3. Equivalent Safety Findings (ESF)

All Trent XWB engine models:
CS-E 790(a)(1) "Ingestion of Large Hailstones"
CS-E 740 "Endurance tests"
CS-E 840 & 850 "HP Rotor "Rotor Integrity" compliance

4.4. Deviations

None

4.5. Environmental Protection

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84 Trent XWB-97 Post SB 72-K440	CS-34 Amendment 4 as implemented by ED Decision 2021/011/R (applicable 25 July 2021), ICAO Annex 16 Volume II, Amendment 10 applicable 1 January 2021 as implemented into EU legislation 27 April 2021. NOx standard in accordance with ICAO Annex 16 Volume II, Part III, Chapter 2, § 2.3.2 e) (CAEP/8). Maximum nvPM mass concentration levels in compliance with Part III, Chapter 4, paragraph 4.2.2.1. nvPM mass and number emissions in compliance with Part III, Chapter 4, paragraph 4.2.2.2 a) 1) and 4.2.2.2 b) 1) (CAEP/11 In-Production standard). Compliance has also been demonstrated with the nvPM standard from ICAO Annex 16 Volume II, Amendment 10, Part III, Chapter 4, paragraph 4.2.2.2 a) 2) and 4.2.2.2 b) 2) (CAEP/11 New-Type standard).
Trent XWB-97 Post SB 72-K428 or post SB 72-K476	CS-34 Amendment 4 as implemented by ED Decision 2021/011/R (applicable 25 July 2021), ICAO Annex 16 Volume II, Amendment 10 applicable 1 January 2021 as implemented into EU legislation 27 April 2021. NOx standard in accordance with ICAO Annex 16 Volume II, Part III, Chapter 2, § 2.3.2 e) (CAEP/8). Maximum nvPM mass concentration levels in compliance with Part III, Chapter 4, paragraph 4.2.2.1. nvPM mass and number emissions in compliance with Part III, Chapter 4, paragraph 4.2.2.2 a) 1) and 4.2.2.2 b) 1) (CAEP/11 In-Production standard). Compliance has also been demonstrated with the nvPM standard from ICAO Annex 16 Volume II, Amendment 10, Part III, Chapter 4, paragraph 4.2.2.2 a) 2) and 4.2.2.2 b) 2) (CAEP/11 New-Type standard)

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

The certified engine configurations are defined in the following Drawing Introduction Sheet (DIS) or later approved issues:

Trent XWB-75	DIS 2304 Issue 3
Trent XWB-79	DIS 2338 Issue 3
Trent XWB-79B	DIS 2339 Issue 3
Trent XWB-84	DIS 2306 Issue 3
Trent XWB-97	DIS 2341 Issue 3

(See note 4)

2. Description

Three-shaft, high bypass ratio, axial flow, turbofan with Low Pressure (LP), Intermediate Pressure (IP) and High Pressure (HP) compressors driven by separate turbines through coaxial shafts:

- single stage LP compressor (fan), 8-stage IP compressor (IPC), 6-stage HP compressor (HPC)
- annular combustor with 20-off fuel spray nozzles
- single stage HP turbine (HPT), 2-stage IP turbine (IPT), 6-stage LP turbine (LPT)
- dual-channel full authority digital engine control (FADEC).

The LP compressor (Fan) diameter is 3.00m (118 inches). The LP and IP assemblies rotate in a counter- clockwise direction; the HP assembly rotates clockwise, when viewed from the rear of the engine. The engine FADEC has an airframe interface for digital bus communications. An Engine Monitor Unit (EMU) provides vibration signals to the aircraft.

3. Equipment

The engine starter is part of the engine type design. Refer to the engine Drawing Introduction Sheet for details. The Thrust Reverser Unit is not part of the engine type design.

(See note 3)

4. Dimensions

	Overall Length (Front edge of A1 flange – fan case – to rear edge of A7 flange – tail bearing housing)	Maximum Radius (from centre line, not including drains mast)
Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84, Trent XWB-97	4483 mm (176.5 inches)	2001 mm (78.8 inches)

5. Dry Weight (kg)

	Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	Trent XWB-97
Maximum dry engine weight, not including fluids, nacelle and aircraft interface parts:	7277	7549

6. Ratings

	Thrust - kN (lbf)				
	Trent XWB-75	Trent XWB-79	Trent XWB-79B	Trent XWB-84	Trent XWB-97
Take-Off Thrust (net) (5 minutes)	330.0 (74200)	351.0 (78900)	351.0 (78900)	374.5 (84200)	431.5 (97000)
Equivalent Bare Engine Take-Off Thrust	334.0 (75094)	355.2 (79845)	355.2 (79845)	379.0 (85213)	436.2 (98074)
Maximum Continuous Thrust (net)	296.3 (66600)	317.6 (71400)	317.6 (71400)	317.6 (71400)	369.6 (83100)
Maximum Continuous	299.9 (67414)	321.4 (72264)	321.4 (72264)	321.4 (72264)	373.6 (83984)

(see note 1 and 2)

7. Control System

The software is part of the engine Type Design:

The control and monitoring system software meets the following levels according to EUROCAE ED- 12B/RTCA DO178B:

- Engine Electronic Controller is designated Level “A”.
- Engine Monitoring Unit is designated Level “E”, except that the flight deck vibration display is level “C”.

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84 – At DIS issue 3 certification:

- Engine Electronic Controller: Version XWB-3.5.3 P/N RRY2FXWB0030008
- Engine Monitoring Unit: Version EX5.0 P/N RRY57M3A0000023

Trent XWB-97 - At DIS issue 3 certification:

- Engine Electronic Controller: Version XWB-5.3.1 P/N RRY2CXWB0011019
- Engine Monitoring Unit: Version EX6.1 P/N RRY5CM3A0000039

8. Fluids (Fuel, Oil, Coolant, Additives)

Fuel and Additives: Refer to the applicable engine “Operating Instructions” document, APPENDIX 1. Oil: Refer to Civil Large Engines – Engine Oils Manual – Publication reference EOM-CIVIL-1RR.

9. Aircraft Accessory Drives

All Trent XWB engine models**:**

Drive	Rotation	Gear ratio / HP rotor	Wet weight (kg)	Overhung Moment (Nm)	Shear Torque (Nm)
Hydraulic Generation (2 drives)	CW	0.363	27.5	51.1	974
Electrical Generation (front)	CCW	1.726	57.6	124	612.2 – 703.9
Electrical Generation (rear)	CCW	1.762	57.6	124	612.2 – 703.9

CW = Clockwise / CCW = Counterclockwise when looking at the gearbox drive pad.

Refer to the applicable engine “Engine Installation Manual” document for installation details and operational requirements.

10. Maximum Permissible Air Bleed Extraction

%W26 and %W30 represent the percentage of air mass-flow through the core of the engine at the HPC entry (location 26) and at the HPC exit (location 30). Bleed flows vary linearly between the points listed.

10.1 Cabin Environmental Bleed Air System (EBAS)

Maximum Normal Cabin Air Bleed Schedule					
Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84			Trent XWB-97		
TET (k)	%W26	Source	TET (k)	%W26	Source
1000	11.0	HP6	1000	10.8	HP6
1415	11.0	HP6	1575	10.8	HP6
1716	4.9	HP6 / IP 8	1675	6.6	HP6
>1786	2.1	IP 8	1744.9	4.9	HP6
			1745	4	IP8
			>1886	2.6	IP8

Maximum Abnormal Cabin Air Bleed Schedule					
Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84			Trent XWB-97		
TET (k)	%W26	Source	TET (k)	%W26	Source
1000	14.6	HP6	1000	14.1	HP6
1485	14.6	HP6	1685	14.1	HP6
1685	12.8	HP6	1790	13.5	HP6
1720	10.4	HP6 / IP8	1814.9	9.9	HP6
1750	6.5	IP8	1815	3.9	IP8
>1815	3.7	IP8	>1886	3.1	IP8

10.2 Nacelle Anti-Icing (NAI) Bleed Air System:

Nacelle Anti-Icing Bleed Schedule					
Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84			Trent XWB-97		
TET (k)	%W26	Source	TET (k)	%W26	Source
1000	1.00	HP3	1000	0.8	HP3
1256	1.00	HP3	1431	0.8	HP3
1685	0.97	HP3	1810.9	0.76	HP3
>1815	0.45	HP3	1811	0.4	HP3
			>1900	0.3	HP3

IV. Operating Limitations

1. Temperature Limits

1.1 Turbine Gas Temperature (°C)

All Trent XWB engine models: The Turbine Gas Temperature (TGT) is measured by thermocouples positioned at the stage 1 Nozzle Guide Vane of the LP Turbine.

	Maximum trimmed TGT (displayed) (See note 6)
Take-Off (5 minutes)	900
Maximum Continuous	850
Ground start and shutdown	700
In-flight relight	900
Maximum exhaust gas over temperature (*)	920

(*) The engine is approved for a maximum exhaust gas over temperature for inadvertent use for periods of up to 20 seconds without requiring maintenance action. The cause of the over temperature must be investigated and corrected.

1.2 Oil Temperature (°C)

	Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	Trent XWB-97
Minimum for starting	minus40	minus40
Minimum for acceleration to power	50	50
Maximum Continuous	180	185.7 (Pre SB 73-K304) 188.1 (Post SB 73-K304)

1.3 Fuel Inlet Temperature (°C)

At the pylon interface point:

	Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	Trent XWB-97
Minimum	minus54 (*)	minus54 (*)
Minimum for ground starting	minus54 (*)	minus54 (*)
Maximum	55	55

(*) or fuel freeze point, whichever is higher

Refer to the applicable engine “Installation Manual” document for additional information.

1.4 Engine Equipment Temperatures

Refer to the applicable engine “Installation Manual” document.

1.5 Climatic Operating Envelope

The engine may be used in ambient temperatures up to ISA +40°C. Refer to the Installation Manual for details of the Operating Envelope, including the air inlet distortion at the engine inlet.

2. Rotational Speed Limits (rpm)

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84		LP Rotor (N1)	IP Rotor (N2)	HP Rotor (N3)
Reference Speed (100%)		2700	8200	12600
Take-off (5 minutes)	Pre SB 73-J148	98.1%	100%	97.4%
	Post SB 73-J148 (4.2.1 Software)	99.1% Post SB 72-H706 (Mk2 Fan)	100%	97.4%
		98.1% Pre SB 72-H706 (Mk1d Fan)		
	Post SB 73-K228 (6.1.1 Software or later approved software version)	99.1% Post SB 72-H706 (Mk2 Fan)	100.2%	98.6%
		98.1% Pre SB 72-H706 (Mk1d Fan)		
Maximum Continuous (*)	All	96.8%	98.5%	96.4%

(*) Maximum Continuous speed limitations recorded in this Data Sheet are not displayed as limitations on the aircraft flight deck. Non-display of these limitations was agreed during the certification programme.

Trent XWB-97		LP Rotor (N1)	IP Rotor (N2)	HP Rotor (N3)
Reference Speed (100%)		2700	8200	12600
Take-off (5 minutes)	Pre SB 73-K304	104.3%	102.6%	99.8%
	Post SB 73-K304 (XWB_97-7.0 Software)	104.3%	102.6%	99.9%
	Post SB 73-K698 (XWB-97_13.0 Software or later approved software version)	104.3%	102.6%	102.2%
Maximum Continuous (*)	Pre SB 73-K140	102.4%	100.0%	98.5%
	Post SB 73-K140 (Profile 4)	101.7%	100.0%	97.9%

(*) Maximum Continuous speed limitations recorded in this Data Sheet are not displayed as limitations on the aircraft flight deck. Non-display of these limitations was agreed during the certification programme.

Stabilised operation in the following N1 speed ranges is not permitted during all ground operations:

N1 Keep Out Zone (KOZ - % N1 - ISA day conditions)		
Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84 (*)	Pre SB 73-K228	71.5% to 79.7%
	Post SB 73-K228 (6.1.1 Software)	68.6% to 79.7%
	Post SB 73-K386 (10.1 Software or later approved software version)	67% to 79.7%
Trent XWB-97 (*)	All	64% to 84%

(*) The Engine Electronic Controller (EEC) software includes a logic which does not permit stabilised operation in this speed range as appropriate for the ambient conditions. However, passing through the above speed range, while increasing or decreasing thrust is permitted.

3. Pressure Limits

3.1 Fuel Pressure Limits

Measured at the pylon interface:

	Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	Trent XWB-97
Minimum absolute	34.5 kPa (5 psi) above Fuel True Vapour Pressure	34.5 kPa (5 psi) above Fuel True Vapour Pressure (Minimum absolute pressure increases with reducing altitude below 14,600 feet)
Maximum gauge pressure - Transient conditions due to high power shut down	2517 kPa (365 psi)	2517 kPa (365 psi)
Maximum gauge pressure - Transient conditions when the engine is running	1276 kPa (185 psi)	1276 kPa (185 psi)
Maximum gauge pressure - Thermal relief after Engine shut down	689 kPa (100 psi)	689 kPa (100 psi)
Maximum gauge pressure - Steady state conditions	483 kPa (70 psi)	483 kPa (70 psi)

3.2 Oil Pressure Limits

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	NH Speed (%)	Oil Pressure kPa (psid)
Pre SB 73-J148 (Version 4.2.1 software)	0	172.4 (25)
	70	172.4 (25)
	92.5	330.9 (48)
	96	517.1 (75)
	97	517.1 (75)
	97.5	655.0 (95)
	100	655.0 (95)
Post SB 73-J148 (Version 4.2.1 software) or later approved software version	0	172.4 (25)
	70	172.4 (25)
	93	296.5 (43)
	96	517.1 (75)
	97	517.1 (75)
	97.5	655.0 (95)
	100	655.0 (95)

Trent XWB-97	NH Speed (%)	Oil Pressure kPa (psid)
Pre SB 73-K304 (Version 7.0 software)	0	172.4 (25)
	75	172.4 (25)
	91.8	289.5 (42)
	95	517.1 (75)
	97.7	517.1 (75)
	105	517.1 (75)
Post SB 73-K304 (Version 7.0 software) or later approved software version	0	172.4 (25)
	75	172.4 (25)
	96	310.3 (45)
	97.7	517.1 (75)
	105	517.1 (75)

4. Installation Assumptions

Refer to the applicable engine “Installation Manual” document.

5. Time Limited Dispatch

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	The engine is approved for Time Limited Dispatch in accordance with CS-E 1030 amendment 3 by EASA Certificate 10050644 dated 26 September 2014 (EEC software version XWB-3.5.3 and later approved revisions). The maximum rectification period for each dispatchable state is specified in the Airworthiness Limitations Section of the applicable “Time Limits Manual”.

Trent XWB-97	The engine is approved for Time Limited Dispatch in accordance with CS-E 1030 amendment 3 by EASA Certificate 10063455 dated 16 October 2017 (EEC software version XWB-5.3.1 and later approved revisions). The maximum rectification period for each dispatchable state is specified in the Airworthiness Limitations Section of the applicable "Time Limits Manual".

6. ETOPS Capability

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	The engine (DIS issue 3 and later approved revisions) are approved for ETOPS capability in accordance with CS-E1040 amendment 3 by EASA Certificate 10050670 dated 29 September 2014 for a Maximum Approved Diversion Time of 405 minutes at Maximum Continuous thrust plus 15 minutes at hold thrust. ETOPS does not require any special engine limitation, marking, placard, or configuration. Engine Condition Monitoring according to task Airbus A350-A- 77-34-XX-00001-398A-A / Rolls-Royce TRENTXWB-A-77-34-00-00A01-370A-A is required. This approval does not constitute an approval to conduct ETOPS operations.
Trent XWB-97	The engine (DIS issue 3 and later approved revisions) is approved for ETOPS capability in accordance with CS-E1040 amendment 3 by EASA Certificate 10065874 dated 15 June 2018 for a Maximum Approved Diversion Time of 405 minutes at Maximum Continuous thrust plus 15 minutes at hold thrust. Oil consumption limits apply to the actual approved diversion time as specified in the A350 ETOPS CMP. Condition Monitoring according to task Airbus A350-A- 77-34-XX-00001-398A-A / Rolls-Royce TRENTXWB-B-77-34-00-00A01-370A-A is required. ETOPS does not require any special marking, placard, or configuration. This approval does not constitute an approval to conduct ETOPS operations.

V. Operational and Service Instructions

Manuals	Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	Trent XWB-97
Installation Manual	EDNS01000727681	EDNS01000583229
Operating Instructions	OI-TRENT-XWB – A350	OI–Trent-XWB-97-A350

Instructions for Continued Airworthiness (ICA)	All Trent XWB
Engine Manual (EM)	TRENTXWB-K0680-EMAN0-01
Time Limits Manual (TLM)	TRENTXWB-K0680-TIME0-01
Cleaning, Inspection and Repair Manual	TRENTXWB-K0680-CIRM0-01
Check and Rectify Manual	TRENTXWB-K0680-CREP0-01
Split Engine Transportation Manual	TRENTXWB-K0680-SETM0-01
Illustrated Parts Catalogue (IPC)	Trent XWB-75: TRENTXWB-K0680-EIPCD-01 Trent XWB-84: TRENTXWB-K0680-EIPCB-01 Trent XWB-97: TRENTXWB-K0680-EIPCC-01
Civil Large Engines – Engine Oils Manual	EOM-CIVIL-1RR
Maintenance Manual	Airbus A350 Customer Aircraft Maintenance Manual
Service Bulletins	Trent XWB — As published by Rolls-Royce

VI. Notes

1. The take-off thrust, with the associated limits, shall not be used continuously more than 5 minutes. The duration may be extended to 10 minutes in case of engine failure of another engine on a multi- engine aircraft. If the duration exceeds 5 minutes, this shall be recorded in the engine logbook.

2. The Equivalent Bare Engine Take-off and Maximum Continuous thrusts quoted above are derived from the approved Net Take-off and Net Maximum Continuous thrust by excluding the losses attributable to the inlet, cold nozzle, hot nozzle, by-pass duct flow leakage and the after body. No power off-takes are assumed.

3 The engines are approved for use with Airframer supplied thrust reverser units (TRU). Refer to the applicable “Installation Manual”, paragraph 5.16.5 “TRU Part Numbers”.

The maximum reverse thrust for all thrust reverser systems should not be used below 60 KCAS when idle reverse thrust should be promptly selected. Reverse thrust should be fully deselected below 40 KCAS.

4 Certified configurations:

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84	In issue 02 of this TCDS, the DIS issue 3 engine configuration approved by EASA Certificate 10050669 dated 29 September 2014 is replacing the originally certified DIS issue 2 configuration. No engines were produced to DIS 2.
Trent XWB-97	In issue 05 of this TCDS, the DIS issue 3 engine configuration approved by EASA Certificate 10063546 dated 20 October 2017 is replacing the originally certified DIS issue 2 configuration. No engines were produced to DIS 2.

5. The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness

is published in the applicable “Time Limits Manual”.

6. The measured TGT is modified by trimming to provide consistent cockpit maximum trimmed TGT indications across all engine models. The TGT trim profile is programmed into the engine Data Entry Plug (DEP), which is fitted to the Engine Electronic Controller (EEC). The EEC processes the measured TGT and calculates the indicated TGT. The maximum TGT pull-down is the maximum value permitted, which corresponds to the maximum cleared turbine temperature:

Trent XWB-75, Trent XWB-79, Trent XWB-79B, Trent XWB-84 maximum TGT pull-down			
TGT Trim Profile	Take-Off (5 minutes)	Maximum Continuous	Maximum exhaust gas over temperature (20 seconds)
DIS Issue 3 (See note 4) (Profile 2)	-62	-70.5	-43.5
Post SB 73-J255 (Profile 5)	-73.5	-67.5	-49.5
Post SB 73-K118 (Profile 6)	-93	-85	-80.5

Trent XWB-97 maximum TGT pull-down			
TGT Trim Profile	Take-Off (2 minutes / 5 minutes)	Maximum Continuous	Maximum exhaust gas over temperature (20 seconds)
DIS Issue 3 (See note 4) (Profile 2)	-124 / -113.5	-106	-103
Post SB 73-K002 (Profile 3)	-127.5 / -116.5	-109.5	-107.5
Post SB 73-K140 (Profile 4)	-138 / -124	-111	-127
Post SB 73-K460 Post SB 72-K440 (Profile 6)	-129 / -118	-111	-109
Post SB 73-K644 (Profile 7)	-138 / -124	-111	-127
Post SB 72-K703 (Profile 7)	-138 / -124	-111	-127

7. In full thrust operating condition, the Smoke Number (SN) of the Trent XWB-97 exceeds the maximum level specified in ICAO Annex 16, Volume II, Part III, Chapter 2.2. EASA has issued a temporary Exemption No. IAW/19/0001 from this SN requirement until a design change has been approved and incorporated to restore full compliance. The design change restoring full compliance is defined by SB 72-K440.

Section 3 Administration

I. Acronyms and Abbreviations

Acronym / Abbreviation	Definition
CS-E	Certification Specifications for Engines
EASA	European Union Aviation Safety Agency
EBAS	Environmental Bleed Air System
EEC	Engine Electronic Controller
EMU	Engine Motor Unit
ETOPS	Extended Time Operations
DIS	Drawing Introduction Sheet
FADEC	Full Authority Digital Engine Control
HP	High Pressure
HPT	High Pressure Turbine
ICAO	International Civil Aviation Organisation
IP	Intermediate Pressure
IPT	Intermediate Pressure Turbine
KOZ	Keep Out Zone
LP	Low Pressure
LPT	Low Pressure Turbine
NAI	Nacelle Anti-Icing
Rpm	Revolutions per Minute
SB	Service Bulletin
SC	Special Conditions
TCDS	Type Certificate Data Sheet
TET	Turbine Entry Temperature
TGT	Turbine Gas Temperature
TRU	Thrust Reverser Unit
W26	Air Mass Flow HPC entry (location 26)
W30	Air Mass Flow HPC exit (location 30)

II. Type Certificate Holder Record

TCH Record	Period
Rolls-Royce plc 62 Buckingham Gate Westminster London SW1E 6AT United Kingdom Design Organisation Approval No.: EASA.21J.035	From 07 February 2013 to 20 February 2019
Rolls-Royce Deutschland Ltd & Co KG Eschenweg 11 Dahlewitz 15827 Blankenfelde-Mahlow Germany	From 21 February 2019

III. Amendment Record

TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
1	03 Mar 2023	Initial Includes EASA Changes at 1 July 2021 Issue 14- Removal of XWB-97 99.8% speed limit for post SB 72-K428 or post SB 72-K476 (Certificate 10074618). Amendment of XWB-84 KOZ limits (Certificate 10076360). Update of note 6 following the introduction XWB-97 Profile 7 (Certificate 10075046). 3 March 2022 Issue 15- Update of XWB-97 MTO HP (N3) speed limit post SB 73-K698 (Certificate 10077985). Amendment of note 3 about thrust reversers approved for use (Certificate 10078134). Update of note 6 following the introduction XWB-97 Mod 72-K703 (Certificate 10078093). 13 October 2022 Issue 16- Record of nvPM emissions compliance with CAEP/11 Standard (EASA Major Change Approval 10080323)	Issue 01, 03 Mar 2023