



## ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent7000-70 BYPASS RATIO: 9.1  
UNIQUE ID NUMBER: 04P24RR145 PRESSURE RATIO ( $\pi_{co}$ ): 43.4  
COMBUSTOR: Phase5 Tiled (Improved nvPM combustor)  
ENGINE TYPE: TF RATED THRUST ( $F_{co}$ ) (kN): 317.8

## REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO <sub>x</sub>	SMOKE NUMBER
D <sub>p</sub> /F <sub>co</sub> (g/kN) or SN	0.0	11.0	64.9	11.0
AS % OF ORIGINAL LIMIT	0.0	9.3	51.2	63.8
AS % OF CAEP/2 LIMIT (NO <sub>x</sub> )			64.0	
AS % OF CAEP/4 LIMIT (NO <sub>x</sub> )			69.2	
AS % OF CAEP/6 LIMIT (NO <sub>x</sub> )			75.7	
AS % OF CAEP/8 LIMIT (NO <sub>x</sub> )			84.4	

For non-volatile particulate matter (nvPM) emissions, please refer to the ICAO Engine nvPM Emissions Data Sheet.

## DATA STATUS

- PRE-REGULATION  
x CERTIFICATION  
- REVISED (SEE REMARKS)

## TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES  
x DEDICATED ENGINES TO PRODUCTION STANDARD  
- OTHER (SEE REMARKS)

## EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE  
(ANNEX 16 VOLUME II)

## CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)

- OUT OF PRODUCTION (DATE: - )  
- OUT OF SERVICE (DATE: - )

## MEASURED DATA

MODE	POWER SETTING (%F <sub>co</sub> )	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO <sub>x</sub>	
TAKE-OFF	100	0.7	2.380	0.00	0.37	50.14	7.1
CLIMB OUT	85	2.2	1.949	0.00	0.50	38.16	9.1
APPROACH	30	4.0	0.648	0.00	0.86	14.79	4.0
IDLE	7	26.0	0.251	0.00	7.47	5.95	1.7
LTO TOTAL FUEL (kg) or EMISSIONS (g)			904	0	3228	19458	-
NUMBER OF ENGINES				3	3	3	3
NUMBER OF TESTS				5	5	5	5
AVERAGE D <sub>p</sub> /F <sub>co</sub> (g/kN) or AVERAGE SN (MAX)				0.0	10.2	61.2	10.0
SIGMA (D <sub>p</sub> /F <sub>co</sub> in g/kN, or SN)				0.0	1.4	1.5	1.6
RANGE (D <sub>p</sub> /F <sub>co</sub> in g/kN, or SN)				0.0	9.04-11.66	60.32-62.95	8.6-11.7

## ACCESSORY LOADS

POWER EXTRACTION 0 (kW)  
STAGE BLEED 0 (% CORE FLOW)

AT - POWER SETTINGS  
AT - POWER SETTINGS

## ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.2-101.6
TEMPERATURE (K)	291.4-299.6
ABS HUMIDITY (kg/kg)	0.00473-0.00986

## FUEL

SPEC	
H/C	1.94
AROM (%)	15.76

MANUFACTURER: Rolls-Royce plc  
TEST ORGANIZATION: Rolls-Royce plc  
TEST LOCATION: Derby  
TEST DATES: 06/05/2020-26/08/2020

NO<sub>x</sub> REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

## REMARKS

- EDNS01000945619
- Improved nvPM combustor

Compliance with Fuel Venting requirements:

x ('x' if complies, 'PR' if pre-regulation, '- ' if information is not available)