



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-E2  
UNIQUE ID NUMBER: 12RR064  
ENGINE TYPE: TF

BYPASS RATIO: 9.6  
PRESSURE RATIO ( $\pi_{00}$ ): 36.3  
RATED OUTPUT ( $F_{00}$ ) (kN): 268.0

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{00}$ (g/kN) or SN	0.2	16.8	47.8	6.5
AS % OF ORIGINAL LIMIT	0.8 %	14.2 %	42.5 %	36.0 %
AS % OF CAEP/2 LIMIT (NOx)			53.1 %	
AS % OF CAEP/4 LIMIT (NOx)			60.1 %	
AS % OF CAEP/6 LIMIT (NOx)			66.8 %	
AS % OF CAEP/8 LIMIT (NOx)			76.2 %	

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

### MEASURED DATA

MODE	POWER SETTING (% $F_{00}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	1.912	0	0.46	36.25	4.1
CLIMB OUT	85	2.2	1.582	0	0.42	28.52	5.2
APPROACH	30	4.0	0.549	0	1.01	12.12	3.1
IDLE	7	26.0	0.223	0.1	11.35	4.98	0.6
LTO TOTAL FUEL (kg) or EMISSIONS (g)			769	36	4207	12196	-
NUMBER OF ENGINES				4	4	4	4
NUMBER OF TESTS				8	8	8	8
AVERAGE $D_p/F_{00}$ (g/kN) or AVERAGE SN (MAX)				0.13	15.7	45.51	5.98
SIGMA ( $D_p/F_{00}$ in g/kN, or SN)				0.12	3.79	0.63	2.26
RANGE ( $D_p/F_{00}$ in g/kN, or SN)				0 - 0.26	11.25 - 20.07	44.95 - 46.26	3 - 8.3

### ACCESSORY LOADS

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

AT - POWER SETTINGS  
AT - POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9 - 102.1
TEMPERATURE (K)	284.1 - 293.2
ABS HUMIDITY (kg/kg)	0.00432 - 0.00968

### FUEL

SPEC	-
H/C	1.9
AROM (%)	17.4

MANUFACTURER: Rolls-Royce  
TEST ORGANIZATION: Rolls-Royce  
TEST LOCATION: Derby  
TEST DATES: FROM 24 Sep 09 TO 03 Aug 12

### REMARKS

- Representative of Package C1 engines
- DNS183412
- Certification in accordance with Part III, Chapter 2, of Amendment 7 of ICAO Annex 16 Vol. II.
- NOx levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

If REVISED, this data supersedes databank UID  
Compliance with fuel venting requirements: x ('x' if complies, PR if pre-regulation)