



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: CFM56-5B3/2P  
UNIQUE ID NUMBER: 4CM038  
ENGINE TYPE: TF

BYPASS RATIO: 5.6  
PRESSURE RATIO ( $\pi_{oo}$ ): 32.8  
RATED OUTPUT ( $F_{oo}$ ) (kN): 142.4

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{oo}$ (g/kN) or SN	7.3	71.5	49.4	2.6
AS % OF ORIGINAL LIMIT	37.0 %	60.6 %	46.8 %	12.3 %
AS % OF CAEP/2 LIMIT (NOx)			58.5 %	
AS % OF CAEP/4 LIMIT (NOx)			68.1 %	
AS % OF CAEP/6 LIMIT (NOx)			76.5 %	
AS % OF CAEP/8 LIMIT (NOx)			88.7 %	

### 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 (% $F_{oo}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	1.470	0.1	0.6	32	0.5
CLIMB OUT	85	2.2	1.150	0.1	1.3	18.6	0.3
APPROACH	30	4.0	0.400	2.9	19.9	7.8	0.5
IDLE	7	26.0	0.130	2.5	34.5	4.3	2.3
LTO TOTAL FUEL (kg) or EMISSIONS (g)			512	807	9141	6420	-
NUMBER OF ENGINES				2	2	2	2
NUMBER OF TESTS				4	4	4	4
AVERAGE $D_p/F_{oo}$ (g/kN) or AVERAGE SN (MAX)				5.57	62.79	44.93	2.25
SIGMA ( $D_p/F_{oo}$ in g/kN, or SN)				-	-	-	-
RANGE ( $D_p/F_{oo}$ in g/kN, or SN)				5.1-6.0	59.3-66.3	44.3-45.5	2.1-2.4

### ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS  
STAGE BLEED 0 % CORE FLOW AT - POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.5-99.74
TEMPERATURE (K)	284.6-292.4
ABS HUMIDITY (kg/kg)	.0081-.0115

### FUEL

SPEC	Jet A
H/C	1.93
AROM (%)	17.33

MANUFACTURER: CFM International  
TEST ORGANIZATION: GEAE Peebles Testing Facility + Techspace Aero (CFMI)  
TEST LOCATION: Peebles, Ohio, USA + Liers, Belgium  
TEST DATES: FROM Aug 96 TO Sep 96

### REMARKS

DAC-II Combustor P/N 1968M99G04

If REVISED, this data supersedes databank UID  
Compliance with fuel venting requirements:

0 ('x' if complies, PR if pre-regulation)