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# CFM56 - 5B MINI PACK

ENGINE MODEL:CFM56-5B4/3

ENGINE S/N:



REQUEST FOR PROPOSAL

Relating to the SALE of one CFM56-5B4/3 engine bearin

# Technical Specification

## Engine

<b>Manufacturer:</b>	CFMI	<b>Total FH:</b>	18,207.38
<b>Model:</b>	CFM56-5B4/3	<b>Total FC:</b>	8,330
<b>Serial Number:</b>		<b>LLP Limiter</b>	Multiple
<b>Thrust (lbs):</b>	5B4	<b>Cycles Remaining</b>	<b>11670</b>
<b>Date of Manufacture:</b>	June 2016	<b>Status</b>	Fresh from shop visit

## Last Shop Visit

<b>Date of Last SV:</b>	-	<b>Maintenance Facility:</b>	<b>MTU-Z</b>
<b>Total FH at SV:</b>	18,207.38	<b>FH Since Last Shop Visit:</b>	-
<b>Total FC at ST:</b>	8,330	<b>FC Since Last Shop Visit:</b>	-
<b>Reason for Last SV:</b>	Engine unpreserved		

## Shop Visit History

Shop Visit Date	Engine unpreserved	Performer	Location	FH	FC
Dec. 2023	Manufactured	MTU-Z	Zhu Hai China	18207.38	8330

## LLP Listing

### Status As of Mar. 2024

Description	Part Number	Serial Number	TSN	CSN	Cycles Operated		ESM Life Limit		Cycles Remaining	
					5B4/3	5B4/3	5B4/3	5B4/3	5B4/3	5B4/3
Booster Spool	338-001-906-0	DV513818	18207.38	8330	8330	30000		21670		
Fan Disk	338-001-504-0	MA321988	18207.38	8330	8330	30000		21670		
Fan Shaft	338-010-601-0	DV121569	18207.38	8330	8330	30000		21670		
HPC Rotor Forward Shaft	1386M56P03	GWN10G7M	18207.38	8330	8330	20000		11670		
HPC Rotor Spool Assy Stage 1-2	1558M31G07	FGB0CK37	18207.38	8330	8330	20000		11670		
HPC Rotor Disk Stage 3	2116M23P01	XAEGE931	18207.38	8330	8330	20000		11670		
HPC Rotor Spool Assy Stage 4-9	2048M20G04	GWN10G31	18207.38	8330	8330	20000		11670		
CDP Rotating Rear Air Seal	2116M25P01	GGF5JCN5	18207.38	8330	8330	20000		11670		
HPT Rotor Front Shaft	2048M21P03	FCVA2479	18207.38	8330	8330	20000		11670		
HPT Front Rotating Air Seal	2410M50P02	XAEGW257	18207.38	8330	8330	20000		11670		
HPT Rotor Disk	2410M49P02	GWN10FP1	18207.38	8330	8330	20000		11670		
HPT Rear Shaft	1864M90P04	TMTD3916	18207.38	8330	8330	20000		11670		
LPT Rotor Disk Stage 1	336-001-804-0	DN306565	18207.38	8330	8330	25000		16670		
LPT Rotor Disk Stage 2	336-001-909-0	PC411483	18207.38	8330	8330	25000		16670		
LPT Rotor Disk Stage 3	336-002-006-0	DV397244	18207.38	8330	8330	25000		16670		
LPT Rotor Disk Stage 4	336-002-105-0	PC446032	18207.38	8330	8330	25000		16670		
LPT Rotor Support	340-301-702-0	DV109007	18207.38	8330	8330	25000		16670		
LPT Shaft	338-010-005-0	PC415014	18207.38	8330	8330	25000		16670		
LPT Case	338-117-407-0		18207.38	8330	8330	N/L		N/L		
LPT Rear Frame	338-171-707-0		18207.38	8330	8330	N/L		N/L		
ENG LLP CY Limiter									11670	


1. Approving Civil Aviation Authority/Country:  <p style="text-align: center;"><b>FAA/United States</b></p>	2. <h1 style="text-align: center;">AUTHORIZED RELEASE CERTIFICATE</h1> <p style="text-align: center;">FAA Form 8130-3, AIRWORTHINESS APPROVAL TAG</p>	3. Form Tracking Number:  <p style="text-align: center;"><b>30332400019112</b></p>
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4. Organization Name and Address:  <p><b>MTU Maintenance Zhuhai Co. Ltd.</b>  <b>1, Tianke Road, Free Trade Zone</b>  <b>519030, Zhuhai, P.R. China</b>  <b>Phone No.: +86 756 8687-806 / Fax No.: +86 756 8687-901</b>  <b>ZUUY862X</b></p>	5. Work Order/Contract/Invoice Number:  <p style="text-align: center;"><b>5248240088      DLA-R-202312-001</b></p>
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6. Item:	7. Description:	8. Part Number:	9. Quantity:	10. Serial Number:	11. Status/Work:
<b>1</b>	<b>CFM56-5B ENGINE</b>	<b>CFM56-5B4/3</b>	<b>1</b>		<b>REPAIRED</b>

12. Remarks: Engine was disassembled, cleaned, inspected, repaired, reassembled and tested per DLA Engines Workscope of 57362, CFM56-5B ESM Rev.79 dated Apr 15, 2023. CFM56-5B WPG R02 dated Mar 2021, and all other MTU and CFMI documents. See Module Shop Visit Reports for work performed on piece parts and modules. See Life Limited Parts List for LLP status. See Summary of Performance Test for engine test details. See AD-Note Status and Recorded Modification Sheet for incorporated ADs, SBs and Technical Orders. Engine outgoing BSI performed I.A.W MTU full outgoing BSI procedures. Engine was delivered with an Open Item List and an Accessory List.  TSN: 18207 CSN: 8330  Reference Certification Numbers: 30332400019110, 30332400019111, 30332400019112	Customer:  Creator: Linna Li
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13a. Certifies the items identified above were manufactured in conformity to:  <input type="checkbox"/> Approved design data and are in a condition for safe operation.  <input type="checkbox"/> Non-approved design data specified in Block 12.	14a. <input checked="" type="checkbox"/> 14 CFR 43.9 Return to Service <input type="checkbox"/> Other regulation specified in Block 12  Certifies that unless otherwise specified in Block 12, the work identified in Block 11 and described in Block 12, was accomplished in accordance with Title 14, Code of Federal Regulations, part 43 and in respect to that work, the items are approved for return to service.
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13b. Authorized Signature:	13c. Approval/Authorization No.:	14b. Authorized Signature: 	14c. Approval/Certificate No.:  <b>ZUUY862X</b>
13d. Name (Typed or Printed):	13e. Date (dd/mmm/yyyy):	14d. Name (Typed or Printed):  <b>YE, JUN, MTU-SZ 05</b>	14e. Date (dd/mmm/yyyy):  <b>07-MAY-2024</b>

**User/Installer Responsibilities**

It is important to understand that the existence of this document alone does not automatically constitute authority to install the aircraft engine/propeller/article.

Where the user/installer performs work in accordance with the national regulations of an airworthiness authority different than the airworthiness authority of the country specified in Block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts aircraft engine(s)/propeller(s)/article(s) from the airworthiness authority of the country specified in Block 1.

Statements in Blocks 13a and 14a do not constitute installation certification. In all cases, aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.

1. Approving Competent Authority / Country  <b>EASA</b>	2. <b>AUTHORISED RELEASE CERTIFICATE</b>  <b>EASA FORM 1</b>	3. Form Tracking Number  <b>30332400019111</b>
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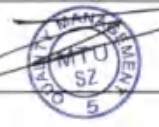
4. Organisation Name and Address  <b>MTU Maintenance Zhuhai Co. Ltd.</b> <b>1, Tianke Road, Free Trade Zone</b> <b>519030, Zhuhai, P.R. China</b> <b>Phone No.: +86 756 8687-806 / Fax No.: +86 756 8687-901</b>	5. Work Order/Contract/Invoice  <b>5248240088      DLA-R-202312-001</b>
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6. Item	7. Description	8. Part No.	9. Qty.	10. Serial No.	11. Status/Work
1	<b>CFM56-5B ENGINE</b>	<b>CFM56-5B4/3</b>	<b>1</b>		<b>REPAIRED</b>

12. Remarks Engine was disassembled, cleaned, inspected, repaired, reassembled and tested per DLA Engines Workscope of 57362 : CFM56-5B ESM Rev.79 dated Apr 15, 2023. CFM56-5B WPG R02 dated Mar 2021, and all other MTU and CFMI documents. See Module Shop Visit Reports for work performed on piece parts and modules. See Life Limited Parts List for LLP status. See Summary of Performance Test for engine test details. See AD-Note Status and Recorded Modification Sheet for incorporated ADs, SBs and Technical Orders. Engine outgoing BSI performed I.A.W MTU full outgoing BSI procedures. Engine was delivered with an Open Item List and an Accessory List.  TSN: 18207 CSN: 8330  Reference Certification Numbers: 30332400019110, 30332400019111, 30332400019112	Customer:  Creator: Linna Li
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13a. Certifies that the items identified above were manufactured in conformity to:  <input type="checkbox"/> approved design data and are in a condition for safe operation  <input type="checkbox"/> non-approved design data specified in block 12	14a. <input checked="" type="checkbox"/> Part-145A.50 Release to Service <input type="checkbox"/> Other regulation specified in block 12  Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was accomplished in accordance with Part-145 and in respect to that work the items are considered ready for release to service.
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13b. Authorised Signature	13c. Approval/Authorisation Number	14b. Authorised Signature	14c. Certificate/Approval Ref. No.  <b>EASA.145.0106</b>
13d. Name	13e. Date (dd mmm yyyy)	14d. Name  <b>YE, JUN, MTU-SZ 05</b>	14e. Date (dd mmm yyyy)  <b>07-MAY-2024</b>



**USER/INSTALLER RESPONSIBILITIES**

This certificate does not automatically constitute authority to install the item(s).

Where the user/installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts items from the airworthiness authority specified in block 1.

Statements in blocks 13a and 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.



1. 国家 Country  China 中国	2. 中国民用航空总局 CAAC  批准放行证书/适航批准标签 AUTHORIZED RELEASE CERTIFICATE/AIRWORTHINESS APPROVAL TAG	<input type="checkbox"/> 符合性 Conformity <input checked="" type="checkbox"/> 适航性 Airworthiness	3. 证书编号 Certificate Ref. No.  30332400019110
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4. 单位 Organization  MTU Maintenance 珠海保税区摩天宇航空发动机维修有限公司 中国广东省珠海市保税区 区天科路一号 519030 D.300025	MTU Maintenance Zhuhai Co. Ltd. 1, Tianke Road, Free Trade Zone 519030, Zhuhai, P.R. China Phone No.: +86 756 8687-806 / Fax No.: +86 756 8687-901	5. 工作单/合同单/货单 Work Order/Contract/Invoice  5248240088 DLA-R-202312-001
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6. 序号 Item	7. 内容 Description	8. 件号 Part No.	9. 适用性 Eligibility	10. 数量 Qty	11. 系列号/批号 Serial/Batch No.	12. 产品状态 Status/Work
1	CFM56-5B ENGINE	CFM56-5B4/3	NOT KNOWN	1		Repaired

13. 备注 Remarks	<p>Engine was disassembled, cleaned, inspected, repaired, reassembled and tested per DLA Engines Worksopce of 573629 CFM56-5B ESM Rev.79 dated Apr 15, 2023. CFM56-5B WPG R02 dated Mar 2021, and all other MTU and CFMI documents. See Module Shop Visit Reports for work performed on piece parts and modules. See Life Limited Parts List for LLP status. See Summary of Performance Test for engine test details. See AD-Note Status and Recorded Modification Sheet for incorporated ADs, SBs and Technical Orders. Engine outgoing BSI performed I.A.W MTU full outgoing BSI procedures. Engine was delivered with an Open Item List and an Accessory List.</p> <p>TSN: 18207 CSN: 8330</p> <p>Reference Certification Numbers: 30332400019110, 30332400019111, 30332400019112</p>	Customer:	Creator: Linna LI
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14. 新产品 New Parts

兹声明上述产品除第13项的其它规定以外, 已按照上述国家适航条例进行制造/检查, 并且该产品(出口产品)符合经批准的型号设计资料和进口国提出的专用要求。

~~Certifies that the Part(s) identified above except as otherwise specified in block 13 was (were) manufactured/inspected in accordance with the airworthiness regulations of the stated country and/or in the case of parts to be exported with the approved design data and with the notified special requirements of the importing country.~~

15. 使用过的产品 Used Parts

兹声明上述产品除第13项的其它规定以外, 已按照上述国家适航条例和进口国通知的特殊要求进行了工作, 该产品处于安全可用状态可以批准放行使用。

Certifies that the work specified above except as specified in block 13 was carried out in accordance with the airworthiness regulations of the stated country and the notified special requirements of the importing country and in respect to that work, the part(s) is (are) in condition for safe operation and considered ready for release to service. (over)

16. 批准人签名 Signature	18. 批准日期 Date
	07-MAY-2024
17. 批准人姓名(打印的) Name (Printed)	YE, JUN, MTU-SZ 05

19. 中国民航总局授权  
Issued by or on behalf of the CAAC

D.300025

批准放行证书/适航批准标签

使用者/安装者职责

(1) 必须明确: 本文件并不批准零件/组件/部件可以装到有关产品上。  
(2) 当使用者/安装者使用的是所在国适航当局的条件, 而不是本表第1项中所指国家适航当局的条例时, 使用者/安装者必须保证所在国的适航当局能接受所指国家适航当局批准出口的零件/组件/部件。  
(3) 表中第14项、第15项的陈述, 并不说明本表是安装批准。在所有情况下, 航空器使用前, 航空器使用者/安装者应按本国适航条例颁发的安装批准放入维修记录中。

AUTHORIZED RELEASE CERTIFICATE/AIRWORTHINESS APPROVAL TAG

USER/INSTALLER RESPONSIBILITIES

(1) It is important to understand that the existence of this document alone does not automatically constitute authority to install the part/component/assembly  
(2) Where the user/installer works in accordance with the national regulations of an Airworthiness Authority different than the Airworthiness Authority of the country specified in block 1 it is essential that the user/installer ensure that his/her Airworthiness Authority accepts parts/components/assemblies from the Airworthiness Authority of the country specified in blo  
(3) Statements 14 and 15 do not constitute installation certification. In all cases the aircraft maintenance record must contain an installation certification issued in accordance with the national regulation by the user/installer before the aircraft may be flown.

## Engine workscope in MTU

Module	Module Description	MTU Proposed WS Level	W/S Remark
00x	Engine		The engines were preservation overdue.
01x	Fan Major Module		
21	Fan booster	Minimum	
22	No.1 and 2 bearing support	TSO2	
61	IGB	TSO2	
23	Fan frame	Minimum	
02x	Core Module	Minimum	
31	HP COMPR. ROTOR ASSY	N/A	
32	HPC FRONT STATOR ASSY	N/A	
33	HPC REAR STATOR ASSY	N/A	
41	COMBUSTION CASE ASSY	N/A	
42	COMBUSTION CHAMBER ASSY	N/A	
51	HP TURB. NOZZLE ASSY	N/A	
52	HP TURBINE ROTOR ASSY	N/A	
53	SHROUD ASSY HPT/LPT NOZZLE	N/A	
03x	LPT Major Module		
54	LPT Rotor/stator assembly	Minimum	
55	LPT Shaft	TSO1	
56	LPT Turbine Rear Frame	Minimum	
62	TRANSFER GBX TGB	TSO2	
63	ACCESSORY GBX (AGB)	TSO2	
Others			
ACC/QEC			Separated sheet

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**ACC workscope**

No.	ACC' s	Overhaul	Visual Check/BT
1	VSV actuators	Y	
2	VBV gear motor	Y	
3	IDG oil cooler	Y	
4	HPTCC valve	Y	
5	LPTCC valve	Y	
6	Main oil/fuel heat exchanger	Y	
7	Fuel pump	Y	
8	Flow & spray check of fuel nozzles	Y	
9	Fuel nozzle filter	Y	
10	Replace filters	Y	
11	HMU	Y	
12	Servo fuel heater	Y	
13	Fuel manifold		Y
14	Oil Tank		Y
15	Lubrication Unit	Y	
16	Oil/Fuel Heat Exchanges	Y	
17	Oil Clogging indicator		Y
18	Chip Detector		Y
19	Oil Temperature sensor		Y
20	Oil Cap		Y



# CFM56-5B Summary of Performance

Engine Type: CFM56-5B 4/3 Engine S/N: TSN: 18207 CSN: 8330 Customer: DLA W/O: 52.482.4.00

This engine was satisfactorily tested per CFM56-5B testing 002 ☒ and 003 ☒, Rev. 80 Reason of Removal: Engine Preservation Overdue

Observed Values						Mechanical Performance						
Fan Speed Modifier (FMN1) Level:		5		T12= 28.6 degc @ TO		CORRECTED START TIME:		38	SEC			
Power Settings	N1(rpm)	THRUST(LBS)		EGT(°C)		N2(rpm)	TSFC	ACCELERATION TIME(15-95% TO):		3.4	SEC	
		ACT.	MODIFIED	ACT.	MODIFIED			CORRECTED OIL PRESSURE @ TO:		54	PSIG	
Minimum Idle	992			398		8992		INDICATED OIL PRESSURE @ MI:		20	PSIG	
Approach Idle	1394			408		10890		SUPPLY OIL TEMPERATURE:		120	°C	
Standard Day Performance(59 °F, 15°C, at Sea Level Static)						OIL CONSUMPTION:		0.41	L/H			
Take Off	4578	27832	27295	763	755	14226	0.3497	HIGHEST EGT DURING START:		385	°C	
Margin		822	285					VIBRATION:				
Max Continuous	4405	25228	24738	724	718	14003	0.3426	#1BRG	#1BRG	TRF	TRF	
Margin		853	363					Minimum Idle	0.31	0.10	0.22	0.27
Hot Day Performance						Approach Idle	0.17	0.05	0.09	0.07		
Take Off				877	868	14790	14750	Max Continuous	1.06	0.95	0.29	0.23
Margin				62	71	228	268	Take Off	1.34	0.86	0.24	0.18
Max Continuous				759	753	14257	14216	VBV SCHEDULE WITHIN LIMITS: YES				
Margin				101	107			VSV SCHEDULE WITHIN LIMITS: YES				
N1 MODIFIER CORRECTED EGT MARGIN: 71						FUEL AND OIL LEAKS WITHIN LIMITS: YES						
REPAIR WORKSCOPE CORRECTED EGT MARGIN: 86						FADEC SYSTEM TEST: PASS						

**Remarks:**

The engine was tested @5B4/3 Takeoff Thrust Rating.  
Total Running Time: 160 min.

EGT Margin(°C):	71
EGT Margin With Workscope(°C):	86
N1 Modifier :	5

Inspector: Ye Jun



Date: 26-Apr-24