CT7-2E1 SERVICE BULLETIN - 71-0000 R01

Revised: 12/22/2021
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SB 71-0000 R01 POWER PLANT - GENERAL (71-00-00) - CONSOLIDATED ON-WING INSPECTION RECOMMENDATIONS AND SERVICING TASKS LIST

GE Designated: -CONFIDENTIAL-

TRANSMITTAL INFORMATION

REVISION 1 TO SERVICE BULLETIN 71-0000

Revision 1 is issued to add inspection of the radial drive shaft assembly to Table 2, Recommended Engine Maintenance Program.

The original was issued October 20, 2020. Revision bars in the left margin identify changes.

1. PLANNING INFORMATION

A. Effectivity

* * * CT7-2E1

This Service Bulletin is applicable to all CT7-2E1 engines.

B. Description

This Service Bulletin moves the Recommended Engine Maintenance program currently in CT7-2E Maintenance Manual, GEK 112043-02, Chapter 05-21-00 to a Service Bulletin. The Mandatory Engine Maintenance program remains in CT7-2E Maintenance Manual, GEK 112043-02, Chapter 05-21-00.

C. Compliance

Category 9

Information only.

Impact F

Implement as deemed necessary per the Service Bulletin Category.

NOTE: This Service Bulletin can be accomplished on wing or in shop.

D. Concurrent Requirements

Perform Mandatory Engine Maintenance program in accordance with CT7-2E Maintenance Manual, GEK 112043-02, Chapter 05-21-00.

E. Reason

(1) Objective:

To improve reliability and to reduce significant events.

(2) Condition:

The recommended engine maintenance program currently resides within CT7-2E Maintenance Manual, GEK 112043-02, Chapter 05-21-00.

(3) Cause:

CT7-2E Maintenance Manual, GEK 112043-02, Chapter 05 currently contains airworthiness limitation sections in Chapter 05-11 and non-airworthiness limitation information in Chapter 05-21 which is causing confusion.

(4) Improvement:

Moving the non-airworthiness limitation information to a Service Bulletin will keep only the airworthiness limitation information in CT7-2E Maintenance Manual, GEK 112043-02, Chapter 05, reducing confusion.

(5) Substantiation:
Administrative change.

F. Approval
This Service Bulletin contains no modification information that revises the approval configuration and therefore does not require FAA or Regulatory approval.

G. Manpower
No additional man-hours are required to comply with this Service Bulletin.

H. Weight and Balance
Weight and balance are not changed.

I. References (Use the latest version of these documents)
CT7 Turboshaft Engine Service Record
GEK 112043-02, CT7-2E Maintenance Manual

J. Publications Affected
GEK 112043-02, CT7-2E Maintenance Manual

K. Interchangeability
Not applicable.

L. Software Accomplishment Summary
Not applicable.

2. MATERIAL INFORMATION

A. Material - Price and Availability

(1) Parts necessary to do this Service Bulletin:
None.

(2) Other Spare Parts:
None.

(3) Consumables:
None.

B. Industry Support Information
None.

C. Configuration Chart
Not applicable.

D. Parts Disposition
None.

E. Tooling - Price and Availability
None.

3. ACCOMPLISHMENT INSTRUCTIONS

A. General

NOTE: Reference CT7-2E Maintenance Manual, GEK 112043-02, Chapter 05-21-00, Mandatory Engine Maintenance Program, TASK 05-21-00-300-803 for mandatory maintenance program requirements.

(1) This section contains the recommended Engine Maintenance Program for CT7-2E1 Turboshaft Engine model.

(2) The Engine Maintenance Program is developed under the guidelines of the Air Transport Association (ATA) and by the manufacturer's recommendations, and consists of the following:

(a) Repetitive visual and borescope inspections of the installed engine's external and internal components.

(b) Specific maintenance checks and tasks.

(c) Manufacturer's Service Bulletin compliance.

(d) Performance trend monitoring.

(e) Exposed hardware inspection requirements.

(3) CT7 Product Support Engineering can require one-time or repetitive inspections applicable to certain engines, depending on configurations, accumulated hours/cycles, operating conditions, or a combination of all these items. Note the following:

(a) The inspections are usually of limited duration, and are not required after replacement or upgrade of the affected hardware.

(b) The inspections will usually be transmitted via Service Bulletin.

B. Recommended Engine Maintenance Program

(1) General:

(a) The scheduled maintenance tasks and frequencies given in this section can be adjusted by the operator. Changes depend on the experience of the operator, and the condition of the maintenance record. Changes must be in accordance with the appropriate local airworthiness authority practices and their approval.

(b) CT7 Product Support Engineering will provide technical assistance and guidance, as necessary, at the operator's request.

(2) Requirements:
(a) One-time requirements.
1 Perform the one-time requirements before the engine is started on the Engine Maintenance Program. Refer to Table 1.
2 Perform the one-time requirements if either of the following conditions exists:
a If the engine has been maintained differently than the Engine Maintenance Program.
b If the maintenance history of the engine is suspicious or unknown.
(b) Recommended Engine Maintenance Program.
1 Perform the scheduled inspections. Refer to Table 2.
2 Refer to the referenced section for detailed instructions.

TABLE 1. ONE-TIME REQUIREMENTS

Requirement	Prior to Starting on the Engine Maintenance Program	Unknown or Suspicious History
Check and Disposition Fault Codes	X	X
Change Engine Oil		X
Replace Oil Filter	X	X
Replace Fuel Filter	X	X
Inspect Igniter Plugs		X
Clean Electrical Chip Detector		X
Waterwash Compressor		X
Perform Power Assurance Check	X	X
Perform 200 Hour Inspection		X
Perform 1600 Hour Inspection		X
Perform Leak Check and Functional Checks	X	X

TABLE 2. RECOMMENDED ENGINE MAINTENANCE PROGRAM

INTERVAL	INSPECTION	GEK 112043-02, CT7-2E MAINTENANCE MANUAL CHAPTER	PROCEDURE NAME
At engine installation and after major maintenance	Do a Ground Power Assurance Test	Refer to Aircraft Maintenance Manual	Not Applicable
At engine installation and when engine operating environment changes	Not Applicable	Refer to paragraph 3.D.	Selection of Cleaning Methods and Intervals
Daily	Check the engine oil level, service, as necessary	72-00-00, SERVICING	Oil Tank Servicing
Daily	Check and disposition FADEC Maintenance Messages	72-00-00, FAULT ISOLATION 001	Fault Isolation
200	Visual Inspection of one igniter plug and ignition lead for each engine on an alternating basis	74-00-00, INSPECTION	Inspection of the Igniter Plug
200	Clean chip detector (This is a one time requirement at 200 hours for new or overhauled engines)	79-00-00, CLEANING	Cleaning of the Electrical Chip Detector
400	Do a visual inspection of the engine for leaks, damaged hardware, looseness of parts, chafing, cracks, and corrosion	72-00-00, INSPECTION 001	Visual Engine Inspections
400	Clean chip detector	79-00-00, CLEANING	Cleaning of the Electrical Chip Detector
800 or 1 yr.	Anti-Ice Bleed Start Valve	75-00-00, INSPECTION	Inspection of AISBV
1600	Complete borescope of engine	72-00-00, INSPECTION	Borescope of the Engine
1600	Heat Clean the fuel injectors	73-00-00, CLEANING	Cleaning of the Fuel Injector Assembly
1600	Replace the fuel filter	73-00-00, REMOVAL AND INSTALLATION	Removal of the Fuel Filter Assembly

1600	Replace the lube filter	79-00-00, REMOVAL AND INSTALLATION	Removal of the Lube Filter
1600	Inspect the radial drive shaft assembly	72-60-00, INSPECTION	Inspection of Radial Drive Shaft Assembly

C. Exposed Hardware Inspection Requirements

(1) It is the obligation of the individually licensed technician or the licensed repair station (if technician is not individually licensed) to visually inspect all engine parts that can be seen before the engine is reassembled. This includes:

(a) All parts removed from the engine that will be reinstalled.

(b) All parts not removed from the engine that can now be seen.

(2) The inspections of these parts must be thorough and the parts must meet the serviceable limits of the inspection tables appropriate for the level of the maintenance. A part does not have to be further disassembled if the area that can be seen is within the serviceable limits.

D. Selection of Cleaning Methods and Intervals

(1) There are various methods and techniques to clean the flow path of the CT7-2 engines. Each operator must select a method that ensures that the engine is properly cleaned. Refer to Table 3. Based on fleet experience these methods work best when matched to the operator's location and flying environment. Initially, the stated interval should be followed. If experience and analysis shows a longer interval is practical, the interval can be adjusted based on experience.

The operator is responsible for monitoring the engine for signs of contaminants (salt, soot, and dirt accumulation) in the inlet and compressor. Sand and dirt accumulation can be noticeable on the combustor, on the GG rotor, and on the stage 1 nozzles when viewed through a borescope. Accumulating contaminants must be removed. Those observations will help define the type of operation and cleaning necessary.

The following operating conditions can not cover every possible situation or combinations of conditions. Contact your GE Field Service Representative for assistance on determining the operating environment and selection of a plan.

(a) NORMAL OPERATION: This is land-based operation away from salt water, dirt, and sand. In this environment, it is unlikely to be exposed to salt water or dirt. The inlet and compressor can accumulate some dirt and soot that is removable with rinsing and washing. These operations are typically flown from paved landing areas and have little or no exposure to dust clouds during take-off and landing or suspended particulate matter in the air.

(b) SALT WATER OPERATION: This is an operation over salt water or in coastal areas. Operation from ships and platforms are in this category as are coastal search and rescue helicopters. The salt environment can extend inland a considerable distance. In this environment, salt can be seen accumulating on engine components both internally and externally. When operating very close to the ocean such as during a rescue hoist, spray can enter the compressor and lower the power margin in a matter of minutes. These conditions can require rinsing the engine after the flight.

(c) DIRT ENVIRONMENT OPERATION: This is a typical operation from land with landings and takeoffs from dirt (unprepared) landing areas. This environment could include heavy industrial areas, as well as areas with sand. These conditions can require rinsing on a post-flight basis based on power margin. Dirt and sand can be suspended in the air in this environment. Suspended particulate matter is generally small enough to enter the small cooling passages of the engine. The operator must monitor the power margin and wash if necessary.

(d) SAND ENVIRONMENT OPERATION: This is an operation, but not limited to desert areas such as the Middle East, South West Asia, Central and Northern Africa. These areas have fine sand particulate matter that can accumulate in the small cooling passages of the engine. In this environment the sand usually keeps the compressor "clean" and minimizes or eliminates the need for daily rinses, even when operating near salt water. The operator must monitor the power margin and wash if necessary.

Cleaning the sand from the engine requires frequent efforts to prevent excessive accumulation. These efforts require both on-wing and off-wing techniques. If cleaning is not performed, blocked cooling holes could lead to rapid erosion or melting of the high pressure turbine blades. This will result in loss of power margin.

TABLE 3. CLEANING METHODS

Operating Environment	**Procedure for Daily Postflight Rinse (GEK 112043-02, CT7-2E, MAINTENANCE MANUAL, CHAPTER 72-00-00, CLEANING 006)**	**Engine Cleaning and Rinsing Procedure (GEK 112043-02, CT7-2E, MAINTENANCE MANUAL, CHAPTER 72-00-00, CLEANING 005)**	**Cleaning and Rinsing Procedure for the Hot Section (GEK 112043-02, CT7-2E, MAINTENANCE MANUAL, CHAPTER 72-00-00, CLEANING 008)**	**Procedure for Hot Section Component Cleaning in a Dirt or Sand Environment (GEK 112043-02, CT7-2E, MAINTENANCE MANUAL, CHAPTER 72-00-00, CLEANING 007)**
Normal Operation	Based on power margin decrease of 10 degrees	Not to exceed 150 hours	Not applicable	Not applicable

	Celsius and inlet inspection			
Salt Water Operation	Daily rinse. Additionally, rinse if power margin decreases 10°C or more after operation close to the surface of the ocean	Based on power margin decrease of 10 degrees Celsius and inlet inspection. Not to exceed 150 hours	Not applicable	Not applicable
Dirt Environment	Daily	Clean at 25 hours	Clean (flush) at 25 hours if sand and dirt accumulation is heavy (thick coating on combustion liner). Can be extended to 50 hours if sand and dirt accumulation is light	Not necessary if maintained in accordance with 72-00-00, CLEANING 008 and Table 3. Recommend cleaning at 150 hours initially. Adjust based on experience
Sand Environment	Not applicable	Based on power margin decrease of 10 degrees Celsius and inlet inspection. Not to exceed 150 hours	Clean (flush) at 25 hours if combustor accumulation is heavy. It can be extended to 50 hours if dirt or sand accumulation is light	Not necessary if maintained in accordance with 72-00-00, CLEANING 008 and Table 3. Recommend cleaning at 150 hours initially. Adjust based on experience.

NOTE: Hours are Flight Hours.

E. Service Record Entry

Record compliance with this Service Bulletin in the appropriate CT7 Turboshaft Engine Service Record.