

HELICOPTER ENGINES

TURBOSHAFT

ARRIEL 2

D

MAINTENANCE MANUAL

VOLUME 1

No. X 292 R1 450 2

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LETTER

This covering letter is not part of the MAINTENANCE MANUAL.
Do not keep it on the MAINTENANCE MANUAL.

Bordes, Dec. 30/2021

Dear Sir / Madam,

The *ARRIEL 2 D MAINTENANCE MANUAL No. X 292 R1 450 2* has been subject to normal update No. 23 on Dec. 30/2021.

A description of the update (description, pages to be removed or inserted) is provided below.

We remain at your disposal for any further information you may require. Very truly yours

Technical Publications

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SAFRAN HELICOPTER ENGINES

ARRIEL 2 D

MAINTENANCE MANUAL

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AIRWORTHINESS LIMITATIONS - APPROVAL

APPROVAL

This Airworthiness Limitations Section is approved by the EASA (European Union Aviation Safety Agency) in accordance with PART 21A.31(a)(3) and CS-E 25(b) where applicable. Any change to each Mandatory replacement time, inspection interval, and related procedure contained in this Airworthiness Limitations Section must also be EASA approved.

EASA Approval date: December, 13th, 2021.

The Airworthiness Limitations Section is FAA approved and specifies maintenance required under §§ 43.16 and 91.403 of Title 14 of the Code of Federal Regulations unless an alternative program has been FAA approved.

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TASK 05-10-00-150-801-A01

**AIRWORTHINESS LIMITATIONS -
GENERAL****1. GENERAL**

Chapter 05-10 specifies the mandatory replacements of life-limited components (Refer to Task 05-10-01-200-801) as well as the mandatory inspection tasks to be carried out to reach the Airworthiness objectives (Refer to Task 05-10-10-200-801).

Chapter 05-10, Airworthiness Limitations section, complies with JAR E.

The following Airworthiness Limitations are based on analyses assuming that the engine will be operated and maintained in accordance with the procedures and inspections defined in the Airworthiness instructions provided with the engine by the Type Certificate holder.

For Critical Parts and related Critical Parts, any repair, modification, maintenance or overhaul procedures not approved by Safran Helicopter Engines as well as any use of parts not supplied by Safran Helicopter Engines can materially affect these part limits.

2. REPORTING ANY ACCIDENT AND INCIDENT

The report of any occurrence that had or may have adverse effect on the engine airworthiness is a major factor for maintaining engine airworthiness and ensuring constant improvement of flight safety.

A. Reporting to Authorities

The operator must report any incident or accident to its respective Authorities, in compliance with the local regulations to which he is subjected.

B. Reporting to the manufacturer

With a view to constantly improve engine safety and reliability, it is necessary that all occurrences observed during operation be reported to Safran Helicopter Engines. This information is used to record and analyse these occurrences and implement adequate action on the in-service fleet, in compliance with the requirements of Airworthiness Authorities. General Service Letter No. 2173/02 defines the terms "incident" and "accident" along with the type of information to be sent to Safran Helicopter Engines following these occurrences.

3. PROCESSING OF MATERIALS INVOLVED IN AN ACCIDENT OR IN AN INCIDENT**A. In the event of an accident**

Any engine, module or equipment installed on an aircraft that has been subject to an Accident Report has become unairworthy and unusable.

Prior to any possible return to operation, this material shall have received appropriate repair or overhaul in a Safran Helicopter Engines approved Repair Center. When returning this material, it must be expressly stated in the accompanying documents that it is an accidented material.

However, any EECU involved in an accident shall be finally declared as unairworthy and immediately withdrawn from service and scrapped.

NOTE: *If Safran Helicopter Engines and the EECU supplier are convinced that the EECU suffered no constraints beyond its operating limits, this material could be*

declared Airworthy again and returned to operation after possible return to an approved Center to carry out a functional test.

B. In the event of an incident

Any engine, module or equipment subject to an Incident Report shall have been totally restored in compliance with the recommended procedures as specified in the Maintenance Manual for the related incident and shall be possibly returned to service (Refer to Task 05-50-00-200-801).

For all other cases, refer to Chapter 71-00-06 - Trouble shooting or contact your local Safran Helicopter Engines representative.

4. TERMS USED IN TABLES FOR LIMITS AND MANDATORY MAINTENANCE TASKS

A. DEFINITIONS

- **DESCRIPTION:** description of the component.
- **PART NUMBER:** part number of the component.
- **MAINTENANCE TASK:** description of the maintenance operation to be performed.
- **TASK NUMBER:** identification of the Maintenance Manual task.
- **PERIODICITY:** interval value of the task application.
- **TOLERANCE:**
 - +: higher interval tolerance value
 - -: lower interval tolerance value.
- **UNIT:** counter unit. Refer to paragraph 4. C.
- **REFERENCE COUNTER:** counter name to which the limit or periodicity applies. Refer to paragraph 4. B.
- **APPLICATION CONDITIONS:** description of the necessary environment for applying the maintenance operation.
- **DATE/SIGNATURE:** cell dedicated to the realization date of the maintenance operation and to visa of the authorized staff if the user wants to make a copy of the tables for performed operation recording.
- **LIMIT:** limit value.
- **NA:** not applicable.
- **COMPONENT STANDARD:** modification standard required for the application of maintenance operation:
 - **ALL:** maintenance operation applicable to all engine / component standards.
 - **ANY OTHER STANDARD:** maintenance operation applicable to any other engine / component standard different from specified minimum component standards.
- **COMPONENT MINIMUM STANDARD:** minimum modification standard required for the application of maintenance operation:
 - **PRE TU... X:** maintenance operation applicable to an engine / component not modified TU... X.
 - **PRE TU... X, PRE TU... Z:** maintenance operation applicable to an engine / component not modified TU... X and not modified TU... Z.
 - **POST TU... Y:** maintenance operation applicable to an engine / component modified TU... Y.
 - **POST TU... Y, POST TU... Z:** maintenance operation applicable to an engine / component modified TU... Y and modified TU... Z.
- **OPERATING CONDITIONS:** condition of engine operation involving the application of the maintenance operation.
- **FH (Flight Hours):** number of flight hours of a component consumed between two given times.
- **C1 or C2 (Cycles 1 or 2):** number of cycles consumed between two given times.

- **CSN1 or CSN2** (Cycles Since New 1 or 2): number of cycles consumed since the component is new.
- **TSN** (Time Since New): number of flight hours consumed since the component is new.

B. ENGINE LOG BOOK COUNTERS

Usage counters of the engine log book, with correspondence of "daily" counters and "cumulation" associated counters.

"Daily" usage counter	"Cumulation" associated counter	Counter unit	Counter definition
DAILY_FLIGHT		FLIGHT	Counter which counts the number of flights (FLIGHT) between two given times.
FH (Flight Hours)		FH	Counter which counts the number of flight hours (FH) of a component between two given times.
	TSN (Time Since New)	FH	Counter which counts the number of flight hours (TSN) since the component is new.
C1		Cycle	Counter which records the number of gas generator cycles (C1) between two given times.
	CSN1 (Cycle Since New 1)	Cycle	Counter which records the number of cycles (CSN1) since the gas generator is new.
C2		Cycle	Counter which records the number of power turbine cycles (C2) between two given times.
	CSN2 (Cycle Since New 2)	Cycle	Counter which records the number of cycles (CSN2) since the power turbine is new.

C. UNITS

- **FH** (Flight Hour): operation time unit in hours.
- **CYCLE**: Refer to Task 05-10-02-200-801.
- **DAY**: calendar day.
- **MIN**: minute.
- **SEC**: seconds.
- **%**: Percentage.
- **FLIGHT**:
 - If periodicity = BEFORE EACH: task to be performed before each flight
 - If frequency = AFTER 15 FLIGHT HOURS OR 7 DAYS : task to be performed after 15 flight hours or after 7 days.

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TASK 05-10-00-200-801-A01

AIRWORTHINESS LIMITATIONS - AUTHORIZED IN-SERVICE LIFE LIMITS

WARNING

IT IS MANDATORY TO REMOVE A LIFE-LIMITED PART FROM SERVICE AS SOON AS IT HAS REACHED ITS AUTHORIZED IN-SERVICE LIFE LIMIT. FAILURE TO DO SO MAY COMPROMISE FLIGHT SAFETY.

1. AUTHORIZED IN-SERVICE LIFE LIMITS

A. Authorized in-service life limits - Definition

Authorized in-service life limits are expressed in number of cycles. They are approved by the Airworthiness Authorities.

They represent the number of cycles that a given part may complete before it must be removed from service. Only parts whose rupture would place the aircraft at risk are concerned.

In service, the number of the reference cycles performed depends on the type of missions the engine is used for. To determine the number of the reference cycles performed, it is necessary to count the number of the complete and partial cycles performed.

NOTE: *The algorithms for counting gas generator cycles (C1 cycles), based on complete and partial cycles and the algorithms for counting power turbine cycles (C2 cycles) based on complete and partial cycles are different.*

These cycles are defined as follows:

(1) Complete cycle

A complete cycle is an engine operation sequence composed of:

- A start
- A significant power increase
- A shutdown.

(2) Partial cycle

A partial cycle is an engine operation sequence corresponding to a significant in-flight turbine speed variation (N1 or N2), without shutting down the engine.

B. Authorized in-service life limits - Initial values

Initial authorized in-service life limit values are based on calculation data, testing or on operational experience. They are approved by the Authorities when the engine Type Certificate is awarded.

C. Authorized in-service life limits - Extension

Authorized in-service life limit values may be extended if approved by the Certification Authorities.

The extension is based on:

- Tests done on new parts or parts removed from service
- Additional justification supported by experience
- A plan for managing service life
- Any other valid justification.

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Airworthiness limitations

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D. Authorized in-service life limits - Life limit values for the ARRIEL 2D engine

Refer to Task 05-10-01-200-801.

E. Counting / Recording of completed cycles

Refer to Task 05-10-02-200-801.

F. Authorized in-service life-limited parts - Additional actions in Repair Center

The list of actions to be applied to all life-limited parts when they are returned to a Repair Center is given in the Airworthiness Limitations section, Task 05-10-00-200-801 of the ARRIEL 2D No. X 292 R1 500 2 Overhaul Manual.

TASK 05-10-01-200-801-A01

**VALUES OF AUTHORIZED IN-SERVICE LIFE LIMITS -
AIRWORTHINESS LIMITATIONS****WARNING**

IT IS MANDATORY TO REMOVE A LIFE-LIMITED PART FROM SERVICE AS SOON AS IT HAS REACHED ITS AUTHORIZED IN-SERVICE LIFE LIMIT. FAILURE TO DO SO MAY COMPROMISE FLIGHT SAFETY.

1. VALUES OF AUTHORIZED IN-SERVICE LIFE LIMITS**A. Authorized in-service life limits - General**

Refer to Task 05-10-00-200-801.

B. Example of table use for authorized in-service life limits

(1) Module X

<i>Description</i>	<i>Part Number</i>	<i>Reference Counter</i>	<i>Limit</i>	<i>Unit</i>
Part for example	NNNNNNNNNN	CSN1	20,000	CYCLE

How to read the table: Before the **CSN1** counter exceeds the limit value of **20,000 CYCLES**, it is **mandatory** to remove from service the « **Part for example** » part number **NNNNNNNNNN**.

C. Table of authorized in-service life limits for the ARRIEL 2D

(1) Module 02

<i>Description</i>	<i>Part Number</i>	<i>Reference Counter</i>	<i>Limit</i>	<i>Unit</i>
Axial compressor wheel	2292153370	CSN1	22,000	CYCLE

(2) Module 03

<i>Description</i>	<i>Part Number</i>	<i>Reference Counter</i>	<i>Limit</i>	<i>Unit</i>
Centrifugal impeller	0292260110	CSN1	22,000	CYCLE
Injection wheel	2292260750	CSN1	10,000	CYCLE
HP turbine disc	2292260060	CSN1	17,000	CYCLE

(3) Module 04

Effectivity: D

VALUES OF AUTHORIZED IN-SERVICE LIFE LIMITS - Airworthiness limitations

<i>Description</i>	<i>Part Number</i>	<i>Reference Counter</i>	<i>Limit</i>	<i>Unit</i>
Power turbine disc	2292810790	CSN2	22,000	CYCLE

TASK 05-10-02-200-801-A01

**AIRWORTHINESS LIMITATIONS -
COUNTING/RECORDING OF CYCLES****WARNING**

IT IS MANDATORY THAT CYCLES CONSUMED DURING OPERATION ARE COUNTED AND RECORDED IN THE ENGINE LOG BOOK. THIS PROCEDURE IS MANDATORY AND IS THE OPERATOR'S RESPONSIBILITY. ANY FAILURE TO COUNT CYCLES OR ANY ERRORS MADE WHEN COUNTING OR RECORDING MAY COMPROMISE COMPONENT RELIABILITY AND AFFECT FLIGHT SAFETY.

CAUTION: IF AN ENGINE OR MODULE IS RETURNED TO AN APPROVED REPAIR CENTER AND CYCLE COUNTS HAVE NOT BEEN CLEARLY RECORDED IN THE ENGINE/MODULE DOCUMENTATION, ALL LIFE LIMITED PARTS WILL BE SYSTEMATICALLY SCRAPPED AND REPLACED.

1. COUNTING/RECORDING OF CYCLES**A. General**

Two cycle counting methods are described below:

- Automatic counting method
- Manual lump counting method.

The automatic cycle counting method is the normal procedure to be used.

If, for whatever reason, the automatic counting method is not available, the manual lump counting method shall be used.

B. Automatic counting method and recording**(1) Counting**

The Engine Electronic Control Unit (EECU) of the engine automatically counts the cycles.

The cycle counting algorithm in the EECU permanently counts the number of cycles of the gas generator (C1 cycles) and of the power turbine (C2 cycles). The total number of (C1) and (C2) cycles is recorded by the EECU and transmitted to a digital display.

NOTE: *Only the information on cycles completed in flight, displayed by the digital display system must be taken into account by the operator for the computing of cycles indicated in the engine log book. Any other information displayed by the digital system must not be taken into account.*

NOTE: *EECU cycle counters will automatically reset to 0 when the number of cycles reaches 32768.*

WARNING

IT IS MANDATORY TO REMOVE A LIFE-LIMITED PART FROM SERVICE AS SOON AS IT HAS REACHED ITS AUTHORIZED IN-SERVICE LIFE LIMIT. FAILURE TO DO SO MAY COMPROMISE FLIGHT SAFETY.

CAUTION: (C1) AND (C2) CYCLE VALUES MUST BE RECORDED IN THE ENGINE LOG BOOK AT THE FREQUENCIES DEFINED IN THE PROCEDURE BELOW.

(2) Recording

(a) Number of gas generator (C1) cycles

Using the digital display system of the helicopter, record in the engine log book the (C1) cycle cumulated value recorded of the engine after 15 flight hours or 7 days (first limit reached) and perform the calculations defined below.

Prior to calculation, check in section C of the engine log book whether the EECU has been replaced/reset between the two readings. If so, take into account the pre and post replacement/reset values when calculating the actual number of cycles consumed.

Calculate after 15 flight hours or 7 days (first limit reached), calculate and record in section E of the engine log book:

- The number of (C1) cycles consumed since the last recording
- The number of (C1) cycles consumed since the last availability state
- The number of (CSN1) cycles consumed since the engine was new
- The cumulated number of EECU (C1) cycles.

NOTE: *For life-limited parts, check that the total number of authorized in-service cycles has not been reached.*

NOTE: *When an authorized in-service life limit of a part is liable to be reached prior to 15 flight hours or 7 days (first limit reached), reduce the recording frequency accordingly.*

(b) Number of power turbine (C2) cycles

Using the digital display system of the helicopter, record in the engine log book the (C2) cycle cumulated value recorded of the engine after 15 flight hours or 7 days (first limit reached) and perform the calculations defined below.

Prior to calculation, check in section C of the engine log book whether the EECU has been replaced/reset between the two readings. If so, take into account the pre and post replacement/reset values when calculating the actual number of cycles consumed.

After 15 flight hours or 7 days (first limit reached), calculate and record in section E of the engine log book:

- The number of (C2) cycles consumed since the last recording
- The number of (C2) cycles consumed since the last availability state
- The number of (CSN2) cycles consumed since the engine was new
- The cumulated number of EECU (C2) cycles.

NOTE: *For life-limited parts, check that the total number of authorized in-service cycles has not been reached.*

NOTE: *When an authorized in-service life limit of a part is liable to be reached prior to 15 flight hours or 7 days (first limit reached), reduce the recording frequency accordingly.*

C. Manual lump counting method and recording

The manual lump method must be used if the automatic cycle counting system is not available.

(1) Counting

(a) Gas generator (C1) cycles

Refer to Figure 1

Each operating phase corresponding to one complete cycle is recorded as 1.15 cycle.

Each operating phase corresponding to one partial cycle is recorded as 0.15 cycle.

The number of (C1) cycles consumed between engine start and subsequent shutdown is calculated as follows:

$C1 = 1.15 + (n \times 0.15)$, with:

n: number of partial cycles

Partial cycles are calculated as follows:

- N1 min. becomes less than 85%.

NOTE: *The value of the lump method coefficients may be revised by Safran Helicopter Engines depending on the mission profile, and the specific operating conditions (take-off weight, type of mission, ambient conditions, etc.).*

NOTE: *Any operator who wishes to do so may contact Safran Helicopter Engines for a specific study.*

(b) Power turbine (C2) cycles

Refer to Figure 2

Each operating phase corresponding to one complete cycle is recorded as 1 cycle.

Each operating phase corresponding to one partial cycle is recorded as 0.10 cycle.

The number of (C2) cycles consumed between engine start and subsequent shutdown is calculated as follows:

$C2 = 1 + (n \times 0.10)$, with:

n: number of partial cycles

Partial cycles are calculated as follows:

- When N2 decreases and reaches a value between 84.9% of N2 and 39.9% of N2.
- When N2 increases and exceeds a min. threshold of N2 min. $\geq 98.8\%$.

NOTE: *When N2 decrease below 39,9%, calculate a new complete C2 cycle.*

WARNING

IT IS MANDATORY TO REMOVE A LIFE-LIMITED PART FROM SERVICE AS SOON AS IT HAS REACHED ITS IN-SERVICE LIFE LIMIT. FAILURE TO DO SO MAY COMPROMISE FLIGHT SAFETY.

CAUTION: (C1) AND (C2) CYCLE VALUES MUST BE RECORDED IN THE ENGINE LOG BOOK AT THE FREQUENCIES DEFINED IN THE PROCEDURE BELOW.

(2) Recording

(a) Gas generator (C1) cycles

After each flight, calculate and record in section E of the engine log book:

- The number of (C1) cycles consumed since the last recording
- The number of (C1) cycles since the last availability state
- The number of (CSN1) cycles since the engine was new.

NOTE: *For life-limited parts, check that the total number of authorized in-service cycles has not been reached.*

NOTE: *When an authorized in-service life limit of a part is liable to be reached prior to 15 flight hours or 7 days (first limit reached), reduce the recording frequency accordingly.*

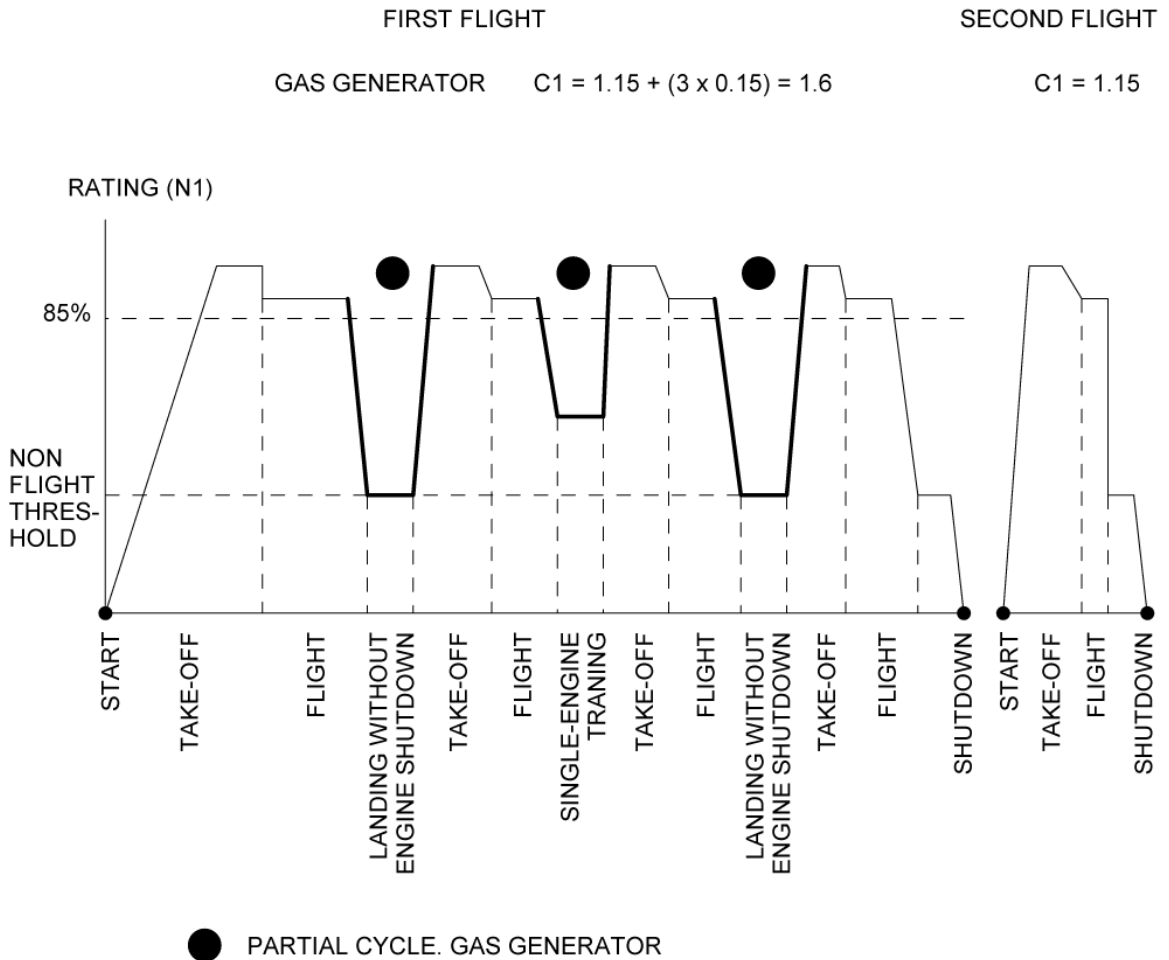
(b) Power turbine (C2) cycles

After each flight, calculate and record in section E of the engine log book:

- The number of (C2) cycles consumed since the last recording
- The number of (C2) cycles since the last availability state
- The number of (CSN2) cycles since the engine was new.

NOTE: *For life-limited parts, check that the total number of authorized in-service cycles has not been reached.*

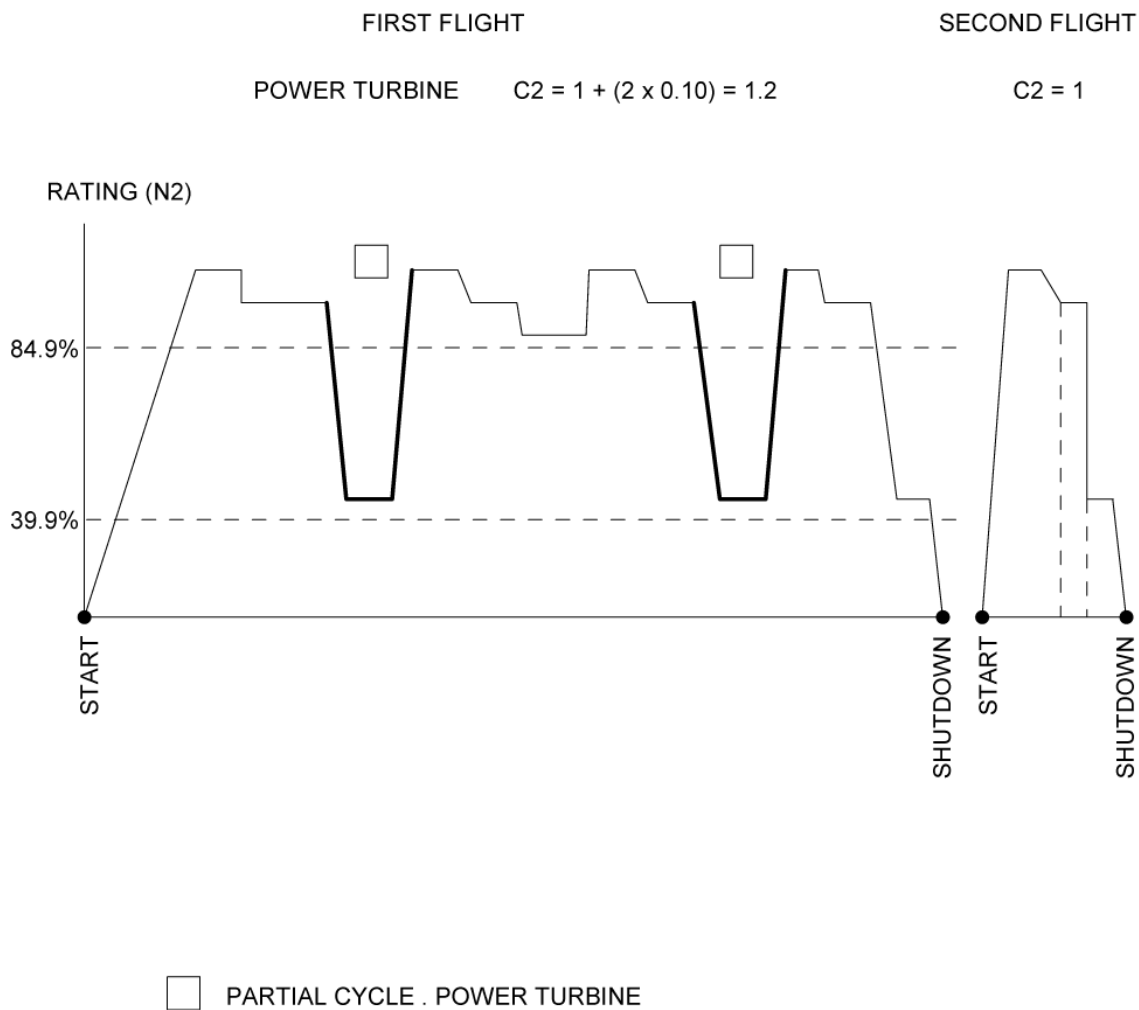
NOTE: *When an authorized in-service life limit of a part is liable to be reached prior to 15 flight hours or 7 days (first limit reached), reduce the recording frequency accordingly.*



TOTAL OF THE DAY $C1 = 1.6 + 1.15 = 2.75$

Gas generator cycle counting using the manual lump method on the ARRIEL 2D
Figure 1

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TOTAL OF THE DAY = 1.2 + 1 = 2.2

Power turbine cycle counting using the manual lump method on the ARRIEL 2D
Figure 2

D. Consistency check of the automatic cycle counting

- (1) Make sure that the values displayed on the display system evolved in relation to the last record performed.
- (2) Make sure that the number of cycles (C1) and (C2) performed during the day and determined from the values displayed on the display system are consistent with the formula that follows:

- Approximate cycle N1 value = $N_f * CN1mt$
- Approximate cycle N2 value = $N_f * CN2mt$.

with:

- N_f : is the number of flights performed (separated by engine shutdown)
- $CN1mt$: represents the cycles number performed on N1 during a corresponding typical mission
- $CN2mt$: represents the cycles number performed on N2 during a corresponding typical mission.

- (3) Make sure that the counting of cycles (C1) and (C2) performed during the day as follows:

Criterion: the max. variation must be $(nf \times 0.2)$ where nf is the number of flights (with engine shut down) performed during the day.

NOTE: *The criterion above is defined for an operation in the Normal mode:*

- *Without operation in the Training mode*
- *Without operation in the Manual mode.*

- (4) If the criteria defined during the consistency check to the automatic cycles counting are not respected:

- If a check performed after only one flight leads to a variation between 0.2 and 0.3, do the check on at least two flights
- In all other cases, inform Safran Helicopter Engines and use the lump method waiting for Safran Helicopter Engines instructions.

TASK 05-10-10-200-801-A01

**AIRWORTHINESS LIMITATIONS -
TABLES OF MANDATORY MAINTENANCE TASKS**

CAUTION: ALL INSPECTIONS MUST BE PERFORMED BY QUALIFIED PERSONNEL.

CAUTION: ALL MAINTENANCE OPERATIONS MUST BE PERFORMED BY QUALIFIED MECHANICS.

CAUTION: REGULARLY RECORD THE NUMBER OF FLIGHT HOURS IN THE ENGINE LOG BOOK.

CAUTION: RECORD THE MANDATORY MAINTENANCE TASKS PERFORMED DURING THESE INSPECTIONS IN THE ENGINE LOG BOOK.

CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.

1. TABLES OF MANDATORY MAINTENANCE TASKS**A. Mandatory maintenance tasks**

Mandatory maintenance tasks describe the actions to be performed to reach the Airworthiness regulatory objectives.

The evolution of the maintenance tasks and/or related frequency can only be approved by the E.A.S.A (European Aviation Safety Agency) and Safran Helicopter Engines.

These tasks are to be performed during servicing inspections, scheduled inspections or unscheduled inspections(Refer to Task 05-15-01-200-801).

NOTE: *Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.*

B. Use example of a scheduled mandatory maintenance tasks table

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS							
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Task for example	71-00-00-ZZZ-YYY	Every 600	+50	FH	TSN	« Engine operating condition for application of task for example »	
<p><i>Component standard for above task: ALL</i></p> <p><i>Application conditions of above task: « Application conditions of task for example »</i></p>							
<p>How to read the table: The « <i>Task for example</i> » No. <i>71-00-00-ZZZ-YYY</i>, and <i>whatever the component standard</i> must be performed every <i>600 +50 flight hours</i> based on the <i>TSN</i> counter and obeying the indicated engine operating condition « <i>Engine operating condition for application of task for example</i> » and the application conditions of task « <i>Application conditions of task for example</i> ».</p>							

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C. Use example of an unscheduled mandatory maintenance tasks table

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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Task for example	71-00-00-ZZZ-YYY	« Engine operating condition for application of task for example »	
<i>Component standard for above task: ALL</i>			
<i>Application conditions of above task: « Application conditions of task for example »</i>			
How to read the table: The « <i>Task for example</i> » No. <i>71-00-00-ZZZ-YYY</i> , and <i>whatever the component standard</i> must be performed obeying the indicated engine operating condition « <i>Engine operating condition for application of task for example</i> » and the application conditions of task « <i>Application conditions of task for example</i> ».			

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D. Scheduled inspection

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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Make sure that nothing is flowing through the main drain of the engine deck.	Refer to Aircraft Maintenance Manual	Before each	NA	FLIGHT	DAILY_FLIGHT	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>							
In the engine log book, record the number of C1 and C2 cycles.	05-10-02-200-801	Before each	NA	FLIGHT	DAILY_FLIGHT	If the automatic counting is not available	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>							
Make sure that the automatic cycle counting is correct.	05-10-02-200-801	Every 15	NA	FH	TSN	ALL	
		Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>							
In the engine log book, record the total number of C1 and C2 cycles consumed as counted by the EECU.	05-10-02-200-801	Every 15	NA	FH	TSN	ALL	
		Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>							
Visually examine the fire protection of the shut-off valve for signs of deterioration.	-	Every 15	NA	FH	TSN	ALL	
		Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>							
Visually examine the HMU for signs of impact or deterioration.	-	Every 15	NA	FH	TSN	ALL	
		Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>							

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CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

Maintenance tasks	Task No.	Periodicity	Tolerance	Unit	Reference Counter	Operating condition	Date/Signature
Visually examine the engine and the engine floor for leakage	-	Every 15	NA	FH	TSN	ALL	
		Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>							
Visually examine the engine attachments for signs of impact or deterioration.	Refer to Aircraft Maintenance Manual	Every 15	NA	FH	TSN	ALL	
		Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>							
Engine health inspection	Refer to Aircraft Flight Manual	Every 25	+2 . 5	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Refer to Aircraft Flight Manual</i>							
Boroscope inspection of combustion chamber including nozzle guide vane.	72-00-43-200-802	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>							
Functional check in the auxiliary mode (EBCAU test)	Refer to Aircraft Flight Manual	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Ground run</i>							
Inspect constant ΔP valve (including membrane replacement and functional test of auxiliary valve).	73-23-00-900-801	Every 4,000	NA	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>							
Note: remove HMU and send it back to a Safran Helicopter Engines approved repair center.							
Check the start injector purge valve of Adjusted Valve Assembly.	73-14-00-700-801	Every 4,000	NA	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>							

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CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS							
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
<p>Prior to sending back the module 04 for overhaul to Safran Helicopter Engines :</p> <p>Check the pipe nut tightening of the power turbine pressurization pipe. Remove and check the power turbine pressurization pipe with magnifying glass x6, and its nipple on the module 05.</p> <p>The power turbine wheel (disc and blades) has to be scrapped at Safran Helicopter Engines if either:</p> <ul style="list-style-type: none"> - the PT pressurization pipe presents a through-going crack, - the PT pressurization pipe is ruptured, - the PT pressurization pipe nut is found loose, - the air path section is reduced in the nipple. <p>Record the mandatory scrapping of the power turbine wheel (disc and blades) at its next removal from the M04, in the engine logbook, in section E and on the logcard of Module 04.</p> <p>AND</p> <ul style="list-style-type: none"> - If the PT pressurization pipe presents a crack or is ruptured : replace the pipe, - If pipe nut is loose: tighten the nut, - If nipple and/or PT pressurization pipe are polluted : clean nipple and/or PT pressurization pipe. 	75-29-00-900-806	Every 5,000	+500	FH	TSN	ALL	
<p><i>Component standard for above task: ALL</i></p> <p><i>Application conditions of above task: Engine removed</i></p>							

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CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Remove and send Module 03 back to Safran Helicopter Engines approved repair center or apply Maintenance Technical Instruction to send back HP turbine wheel only for visual inspection of HP turbine wheel fir-tree roots for clogging. If one of the fir-tree root is completely clogged, discard HP turbine disc.	72-00-43-900-801	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine or module removed</i>							
Remove engine or Module 03 and send it back to Safran Helicopter Engines approved repair center for checking that the HP turbine containment shield is free from crack using dye penetrant inspection. If presence of crack, discard the HP turbine containment shield.	72-00-43-900-801	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine or module removed</i>							
Remove engine or module 03 and send it back to Safran Helicopter Engines approved repair center for checking that the power turbine containment shield is free from crack using dye penetrant inspection. If presence of crack, discard the Power Turbine containment shield.	72-00-43-900-801	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine or module removed</i>							

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E. **Unscheduled inspection****CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS**

<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Operating condition</i>	<i>Date/Signature</i>
<p>Limit the life of Power Turbine Wheel to 5,500 FH since last M04 overhaul in addition to disc and blades limits, scrap at first limit reached.</p> <p>In the engine logbook, in section E and on the logcard of Module 04: Record the mandatory scrapping of the power turbine wheel (disc and blades) at its next removal from the M04.</p> <p>AND</p> <ul style="list-style-type: none"> - If PT pressurization pipe presents a through-going crack or is ruptured : replace the PT pressurization pipe, - If pipe nut is loose: tighten the nut, - If nipple and/or PT pressurization pipe are polluted : clean nipple and/or PT pressurization pipe. 	75-29-00-900-806	If either : the power turbine pressurization pipe presents a through-going crack, or this PT pressurization pipe is ruptured, or the pipe nut is found loose, or the air path section is reduced in the nipple of this PT pressurization pipe.	
<p><i>Component standard for above task: ALL</i></p> <p><i>Application conditions of above task: Engine installed on helicopter or engine removed</i></p>			

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TASK 05-15-00-200-801-A01

**FREQUENCIES -
FREQUENCIES OF THE TURBOSHAFT ENGINE
MAINTENANCE**

CAUTION: REGULARLY RECORD THE NUMBER OF FLIGHT HOURS AND CREEP DAMAGE COUNTER VALUE IN THE ENGINE LOG BOOK.

1. FREQUENCIES OF THE TURBOSHAFT ENGINE MAINTENANCE**A. Time Between Overhauls (TBO)****(1) Time Between Overhauls - Definition**

The TBO of a material (engine, module, equipment or accessory) is the maximum authorized time before it is required to return this material to overhaul, following operation under normal use conditions.

The normal operating conditions are the conditions conforming to the criteria set down by the manufacturer and the Airworthiness Authorities for engine Certification.

TBO is expressed in flight hours.

NOTE: *Flight hours must be counted from the time the wheels (or skids) leave the ground until they touch back down.*

Counting of flight hours begins on the day the material, installed on the airframe, performs its first flight following:

- Manufacture
- Overhaul
- Repair during which TBO values in flight hours are restored.

TBO values in flight hours are defined in Task 05-15-00-201-801.

NOTE: *Any module returned to a Repair Center without a log card or one that does not include the operating hours and cycles will be systematically overhauled.*

(2) Initial TBO

Engines, modules, certain equipment and accessories have an initial TBO.

The initial TBO value, approved by the Authorities at the time of approval or engine type Certification is based upon:

- The experience gained in development and substantiation tests performed
- The experience gained in operation.

(3) TBO extension

The initial TBO value can be subject to extension programs.

Data records by operators allows reliability analyses to be performed for each type of engine. This data can be used to support to TBO extension programs.

For a specific extension, application must be drawn up to Safran Helicopter Engines and shall be only effective after written consent of Safran Helicopter Engines.

(4) TBO extension/modification standard of material

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When a new TBO value is declared, the manufacturer will define the modifications that must be incorporated to the material (minimum standard) to allow optimization of this new TBO.

(5) "Basic" TBO

Declared TBO values (either initial or revised TBO) must be considered as basic values, used for indication purposes only.

This "basic" TBO represents the maximum service life allowable for engines operating under normal operating and maintenance conditions. The "basic" TBO can be modified under certain operating conditions of varying severity.

(6) Publishing "basic" TBO data

"Basic" TBO values (engines, modules, equipment and accessories) are listed in Task 05-15-00-201-801.

(7) Approval by the local Airworthiness Authorities

"Basic" or specific TBO values are values recommended by Safran Helicopter Engines. It is the individual operator's responsibility to have its engine TBO approved by the local Airworthiness Authorities, and to respect this TBO.

Once these TBO values have been approved, it is the operator's responsibility to ensure and maintain the reliability of the material and not compromise flight safety.

B. Calendar limit

Calendar limit is the length of time, expressed in years, for which a material is authorized to operate under normal operating conditions.

Normal operating conditions are conditions that conform to criteria defined by the manufacturer and the Airworthiness Authorities for engine Certification.

Counting of calendar limit begins on the day the material, installed on the airframe, first enters into service following:

- Manufacture
- Overhaul
- Repair during which calendar limit values are restored.

Calendar limit values are defined in Task 05-15-00-201-801.

NOTE: If the equipment's accompanying documentation does not include the date of entry into service, the calendar limit date of record will be the most recently occurring date among the following:

- ***manufacture***
- ***last overhaul***
- ***last repair that included procedures to reset the calendar limit.***

(1) Management of calendar limit

Counting of calendar limit is not interrupted by intermediate removals between overhauls or by storage periods following the date of first entry into service.

For any engine sent to repair, the user must specify if he wishes that modules, which calendar availability is strictly less than 3 years, be maintained without intervention.

Failing specific operator's instructions, repair enabling calendar limit to be restored shall be performed on modules which availability is less than 3 years.

Any repaired or overhauled engine which calendar limit accessories do not require disassembly, will have its accessories reintroduced into service without intervention, if their calendar availability is 3 years as a minimum.

Accessories must be disassembled if:

- Calendar availability is less than 3 years
- The operator asks for a full calendar limit of accessories.

(2) Management of accessories calendar limit

Counting of calendar limit is not interrupted by intermediate removals between overhauls or by storage periods following the date of first entry into service.

For any accessory sent to repair, the criteria for limit restoration are as follows:

- If the accessory calendar availability is less than 3 years, the operator must specify if he wishes the accessory to be maintained without performing a repair to restore its calendar limit. Failing specific operator's instructions, repair enabling calendar limit to be restored must be performed
- If the accessory calendar availability is more than 3 years, the operator must specify if he wishes to perform a repair restoring calendar limit of the accessory. Failing specific operator's instructions, repair enabling full calendar limit to be restored is not to be performed.

C. Definition of creep damage

The creep damage is typical of the creep resistance of HP turbine blades.

The creep damage of HP turbine blades is the authorized use limit before this material must be removed from service in normal operating conditions.

Normal use conditions are conditions that conform to criteria defined by the manufacturer and for the engine certification.

Creep damage is expressed in percentage.

Creep damage values are defined in Task 05-15-00-201-802.

(1) Automatic creep damage counting

The Engine Electronic Control Unit (EECU) automatically counts the creep damage.

The automatic creep damage counting method is the normal procedure to be used.

(2) Manual creep damage counting

The manual creep damage counting will be used in case of unavailability of the automatic creep damage counting.

The creep damage of the module will be incremented by the calculated value, and a maintenance action will be held to restore the automatic counting.

The creep damage is calculated as follow:

- $CRD(\%) = 0.27 \times t$, with:
t: total running time of the blade since last creep damage reading (in hour).

D. Use-limited parts

In order to optimize the service life of certain components by keeping them in service for as long as possible aiming for the highest reliability (both prior to and following repairs), use limits, expressed in hours or cycles, or creep damage have been defined, based on tests and experience gained in operation. These use limits allow parts to have their service life extended rather than be replaced during overhaul.

Unlike authorized in-service life-limited parts, use-limit values are not submitted to the Airworthiness Authorities for approval (Refer to Task 05-10-00-200-801).

The list of components which have use limits is provided in Task 05-15-00-201-802.

The operating hours, cycles and creep damage of these components must be systematically recorded to enable reliable follow-up. Doing this enables components to be replaced as close as possible to the actual end of their use limits.

NOTE: *The number of cycles completed by a component must be calculated and recorded according to the module it belongs to (gas generator or power turbine) in accordance with the procedure given in Task 05-10-02-200-801.*

The Repair Centers that tracks the use limits for these parts must indicate their remaining available hours, cycles and creep damage on the Exchangeable Supply Log Card that accompanies the module on which the part is found.

NOTE: *Any use-limited parts of a module returned to a Repair Center without a log card or a specific card that does not include the operating hours, cycles and creep damage will be systematically replaced.*

E. Practical instructions

- (1) Return of a material (engine, module, equipment or accessory) for repair or overhaul

The material must be removed and returned to the manufacturer or approved Repair Center in the following cases:

- (a) When a life-limited part is about to reach its authorized in-service life limit.
Refer to Task 05-10-01-200-801.
- (b) When the number of flight hours corresponding to the TBO defined for that particular operator has been reached.
Refer to Task 05-15-00-201-801.
- (c) When the calendar limit has been reached.
Refer to Task 05-15-00-201-801.
- (d) When a use-limited part is about to reach its use limit in hours and/or cycles and/or creep damage as defined in the Exchangeable Supply Log Cards.
Refer to Task 05-15-00-201-802.
- (e) Prior to reach any of the preceding four limits, if an inspection or reconditioning of a material is proved necessary for any other reason.

NOTE: *Some interventions can be applied by Safran Helicopter Engines approved operators for the application of the corresponding procedures.*

NOTE: *Depending on the type of maintenance operations carried out on the material, together with its prior service and operating time, there are two possibilities for its return to service:*

- *Either the intervention is an OVERHAUL: the material is returned to service and assigned a FULL TBO.*
- *Or the intervention is a REPAIR: the material is returned to service and assigned a REMAINING TBO and a remaining creep damage.*

F. Replacement of life-limited components

Refer to Airworthiness Limitations - Life limits: Task 05-10-00-200-801.

2. TERMS USED IN TABLE FOR LIMITS AND MAINTENANCE TASKS

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A. DEFINITIONS

- **ITEM:** ATA item number of component.
- **DESCRIPTION:** description of the component.
- **PART NUMBER:** part number of the component.
- **MAINTENANCE TASK:** description of the maintenance operation to be performed.
- **TASK NUMBER:** identification of the Maintenance Manual task.
- **LEVEL:** classification of the maintenance task. Refer to Task 05-15-01-200-801 (paragraph 1. A.).
- **PERIODICITY:** interval value for the task application.
- **TOLERANCE:**
 - +: higher interval tolerance value
 - -: lower interval tolerance value.
- **UNIT:** counter unit. Refer to paragraph 2. C.
- **REFERENCE COUNTER:** counter name to which the limit or periodicity applies. Refer to paragraph 2. B.
- **MAINTENANCE METHOD:** monitoring component method
- **APPLICATION CONDITIONS:** description of the necessary environment for applying the maintenance operation.
- **DATE/SIGNATURE:** cell dedicated to the realization date of the maintenance operation and to visa of the authorized staff if the user wants to make a copy of the tables for performed operation recording.
- **LIMIT:** limit value.
- **NA:** not applicable.
- **COMPONENT STANDARD:** modification standard required for the application of maintenance operation:
 - **ALL:** maintenance operation applicable to all engine / component standards.
 - **ANY OTHER STANDARD:** maintenance operation applicable to any other engine / component standard different from specified minimum component standards.
- **COMPONENT MINIMUM STANDARD:** minimum modification standard required for the application of maintenance operation:
 - **PRE TU... X:** maintenance operation applicable to an engine / component not modified TU... X.
 - **PRE TU... X, PRE TU... Z:** maintenance operation applicable to an engine / component not modified TU... X and not modified TU... Z.
 - **PRE TU... X, POST TU... Z:** maintenance operation applicable to an engine / component not modified TU... X and modified TU... Z.
 - **POST TU... Y:** maintenance operation applicable to an engine / component modified TU... Y.
 - **POST TU... Y, POST TU... Z:** maintenance operation applicable to an engine / component modified TU... Y and modified TU... Z.
- **OPERATING CONDITIONS:** condition of engine operation involving the application of the maintenance operation.
- **FH (Flight Hours):** number of flight hours of a component consumed between two given times.
- **C1 or C2 (Cycles 1 or 2):** number of cycles consumed, between two given times.
- **CSN1 or CSN2 (Cycles Since New 1 or 2):** number of cycles consumed since the component is new.
- **TSN (Time Since New):** number of flight hours consumed since the component is new.
- **TSO (Time Since Overhaul):** number of flight hours consumed since the component has been overhauled.

B. ENGINE LOG BOOK COUNTERS

Usage counters of the engine log book, with correspondence of "daily" counters and "cumulation" associated counters.

<i>"Daily" usage counter</i>	<i>"Cumulation" associated counter</i>	<i>Counter unit</i>	<i>Counter definition</i>
DAILY_FLIGHT		FLIGHT	Counter which counts the number of flights (FLIGHT) between two given times.
FH (Flight Hours)		FH	Counter which records the number of flight hours (FH) of a component between two given times.
	TSN (Time Since New)	FH	Counter which records the number of flight hours (TSN) since the component is new.
	TSO (Time Since Overhaul)	FH	Counter which records the number of flight hours (TSO) since the component has been overhauled.
C1		Cycle	Counter which records the number of gas generator cycles (C1) between two given times.
	CSN1 (Cycle Since New 1)	Cycle	Counter which records the number of cycles (CSN1) since the gas generator is new.
C2		Cycle	Counter which records the number of power turbine cycles (C2) between two given times.
	CSN2 (Cycle Since New 2)	Cycle	Counter which records the number of cycles (CSN2) since the power turbine is new.
	CRD (CReep Damage)	%	Counter which records the day elapsed percent of creep damage of HP turbine blades since the last overhaul or since new.

C. UNITS

- **FH** (Flight Hour): operation time unit in hours (Refer to paragraph 1. B of Task 05-15-00-200-801)
- **CYCLE**: Refer to Task 05-10-02-200-801.
- **YEAR**: calendar year
- **MONTH**: calendar month.
- **DAY**: calendar day
- **MIN**: minute
- **SEC**: seconds
- **%**: percentage
- **FLIGHT**:
 - If frequency = BEFORE FIRST: task to be performed before the first flight of the day
 - If frequency = BEFORE EACH: task to be performed before each flight
 - If frequency = AFTER 15 FLIGHT HOURS OR 7 DAYS : task to be performed after 15 flight hours or after 7 days.

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Frequencies

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TASK 05-15-00-201-801-A01

**FREQUENCIES -
TBO TABLE****CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.****1. TBO VALUES FOR ENGINES/MODULES/EQUIPMENT AND ACCESSORIES****A. TBO - General**

(Refer to Task 05-15-00-200-801)

Refer to the Engine Log Book (current and single) to know the modification standard.

Module modifications:

- Recorded on the Module Log Card.

Off-Module modifications:

- Recorded on the Engine Log Book, Section "A" for the modifications applied at the time of delivery
- Recorded on the Engine Log Book, Section "E" for the modifications applied at the operator's or in a Service Center.

B. Example of a table use for engines/modules/equipment and accessories

<u>CAUTION:</u> IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS				
<i>Item</i>	<i>Description</i>	<i>Periodicity</i>	<i>Unit</i>	<i>Reference Counter</i>
72-00-00-01-XXX	Module for example	Every 3,000	FH	TSO
<i>Component standard for above task: ALL</i>				
<u>How to read the table:</u> Before the <i>TSO</i> counter exceeds the TBO limit value of 3,000 flight hours, it is required to remove and send for overhaul the « Module for example » item (72-00-00-01-XXX) .				

C. TBO table for engines/modules/equipment and accessories**CAUTION: YOU MUST CHECK THE STANDARD OF THE ENGINE AND ITS MODULES ANY TIME A MODULE IS REPLACED TO MAKE SURE THE STANDARD IS CONSISTENT WITH THE TBOS TAKEN INTO ACCOUNT IN THE AVAILABILITY.**

- (1) TBO table for engine and modules

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS				
<i>Item</i>	<i>Description</i>	<i>Periodicity</i>	<i>Unit</i>	<i>Reference Counter</i>
72-61-00-01-001	Module 01 assy - Accessory gearbox	Every 5,000	FH	TSO
<i>Component standard for above task: ALL</i>				
72-32-00-01-001	Module 02 assy - Axial compressor	Every 5,000	FH	TSO
<i>Component standard for above task: ALL</i>				
72-43-00-01-001	Module 03 assy - Gas generator	Every 5,000	FH	TSO
<i>Component standard for above task: ALL</i>				
72-54-00-01-001	Module 04 assy - Power turbine	Every 5,000	FH	TSO
<i>Component standard for above task: ALL</i>				
72-15-00-01-001	Module 05 assy - Reduction gear	Every 5,000	FH	TSO
<i>Component standard for above task: ALL</i>				

(2) TBO table and maintenance methods for equipment and accessories

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS				
<i>Item</i>	<i>Description</i>	<i>Periodicity</i>	<i>Unit</i>	<i>Reference Counter</i>
71-00-00-01-003	Engine Electronic Control Unit	On condition	-	-
<i>Component standard for above task: ALL</i>				
Equipment/accessory accompanied with an log card				
71-51-00-01-010	Control and monitoring harness	On condition	-	-
<i>Component standard for above task: ALL</i>				
71-51-00-01-020	Control harness	On condition	-	-
<i>Component standard for above task: ALL</i>				
72-43-00-01-460	Igniter	On condition	-	-
<i>Component standard for above task: ALL</i>				
72-43-00-01-550	Injector	On condition	-	-
<i>Component standard for above task: ALL</i>				
72-61-00-01-650	Alternator	On condition	-	-
<i>Component standard for above task: ALL</i>				
72-61-00-01-880	Torquemeter sensor	On condition	-	-
<i>Component standard for above task: ALL</i>				
72-70-00-01-200	Exhaust pipe	On condition	-	-
<i>Component standard for above task: ALL</i>				
73-14-00-01-010	Adjusted valve assembly	On condition	-	-
<i>Component standard for above task: ALL</i>				
Equipment / accessory accompanied with a log card				

Effectivity: D

SAFRAN HELICOPTER ENGINES

ARRIEL 2 D

MAINTENANCE MANUAL

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS				
<i>Item</i>	<i>Description</i>	<i>Periodicity</i>	<i>Unit</i>	<i>Reference Counter</i>
73-23-00-01-010	Pump and metering unit assembly	Every 4,000	FH	TSO
<i>Component standard for above task: ALL</i>				
Equipment/accessory accompanied with an log card				
73-23-14-02-650	Fuel pressure and temperature transmitter	On condition	-	-
<i>Component standard for above task: ALL</i>				
73-23-14-02-740	Fuel pressure transmitter	On condition	-	-
<i>Component standard for above task: ALL</i>				
73-23-14-02-780	Fuel filter visual blockage indicator	On condition	-	-
<i>Component standard for above task: ALL</i>				
74-11-10-01-010	Ignition box	On condition	-	-
<i>Component standard for above task: ALL</i>				
75-31-00-01-050	Bleed valve	On condition	-	-
<i>Component standard for above task: ALL</i>				
75-41-00-01-010	P3 pressure transmitter	On condition	-	-
<i>Component standard for above task: ALL</i>				
77-11-00-01-010	N1 speed sensor	On condition	-	-
<i>Component standard for above task: ALL</i>				
77-12-00-01-010	N2 speed sensor	On condition	-	-
<i>Component standard for above task: ALL</i>				
77-12-00-01-020	N2 speed sensor	On condition	-	-
<i>Component standard for above task: ALL</i>				
77-12-00-01-030	N2 speed sensor	On condition	-	-
<i>Component standard for above task: ALL</i>				
77-21-00-01-010	Pyrometric harness	On condition	-	-
<i>Component standard for above task: ALL</i>				
77-21-00-01-020	Pyrometric harness	On condition	-	-
<i>Component standard for above task: ALL</i>				
77-33-10-01-010	Engine Data Recorder	On condition	-	-
<i>Component standard for above task: ALL</i>				
79-24-00-01-010	Oil pump	On condition	-	-
<i>Component standard for above task: ALL</i>				
79-25-00-01-010	Valve assembly	On condition	-	-
<i>Component standard for above task: ALL</i>				
79-32-00-01-010	Oil pressure transmitter	On condition	-	-
<i>Component standard for above task: ALL</i>				
79-33-00-01-010	Oil pressure and temperature transmitter	On condition	-	-
<i>Component standard for above task: ALL</i>				

Effectivity: D

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS				
<i>Item</i>	<i>Description</i>	<i>Periodicity</i>	<i>Unit</i>	<i>Reference Counter</i>
79-36-00-01-010	Mechanical magnetic plug	On condition	-	-
<i>Component standard for above task: ALL</i>				
79-36-00-01-030	Mechanical magnetic plug	On condition	-	-
<i>Component standard for above task: ALL</i>				
79-38-00-01-030	Electrical magnetic plug	On condition	-	-
<i>Component standard for above task: ALL</i>				
83-12-00-01-001	Free wheel assy equipped	Every 5,000	FH	TSO
<i>Component standard for above task: ALL</i>				
Equipment/accessory accompanied with a log card <i>Note : The limits of the free wheel are under the helicopter manufacturer responsibility. In case of difference between the Engine MM and the AMM, the AMM remains the reference to take into account.</i>				

CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.

2. CALENDAR LIMITS

A. Calendar limits - General

(Refer to Task 05-15-00-200-801)

B. Example of a table for calendar limits

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS				
<i>Item</i>	<i>Description</i>	<i>Periodicity</i>	<i>Unit</i>	<i>Reference Counter</i>
72-00-00-01-XXX	Module for example	Every 15	YEAR	-
<i>Component standard for above task: ALL</i>				
How to read the table: Every time the CALENDAR counter reaches the limit value of 15 YEARS , it is required to remove and send to an approved repair center the « Module for example » item (72-00-00-01-XXX) .				

C. Calendar limits for engine and modules

Not applicable

D. Calendar limits of equipment and accessories

Effectivity: D

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS				
<i>Item</i>	<i>Description</i>	<i>Periodicity</i>	<i>Unit</i>	<i>Reference Counter</i>
73-23-00-01-010	Pump and metering unit assembly	Every 10	YEAR	-
<i>Component standard for above task: ALL</i>				
Equipment/accessory accompanied with an log card				

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TASK 05-15-00-201-802-A01

FREQUENCIES - LIST OF USE-LIMITED PARTS

WARNING

IT IS REQUIRED TO REMOVE A USE-LIMITED PART FROM SERVICE AS SOON AS IT HAS REACHED ITS AUTHORIZED IN-SERVICE LIFE LIMIT. FAILURE TO DO SO MAY CAUSE THE OCCURRENCE OF EVENT LIABLE TO AFFECT THE ENGINE OPERATING SAFETY.

CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.

1. USE-LIMITED PARTS

A. Use-limited parts - General

(Refer to Task 05-15-00-200-801)

B. Example of table use for use-limited parts

(1) Module X

<i>Description</i>	<i>Part Number</i>	<i>Reference Counter</i>	<i>Limit</i>	<i>Unit</i>
Part for example	NNNNNNNNNN	CSN1	10,000	CYCLE

How to read the table: Before the **CSN1** counter exceeds the limit value of **10,000 CYCLES**, it is **required** to remove from service the « **Part for example** » part number **NNNNNNNNNN**.

C. Tables of use-limited parts for the ARRIEL 2D

(1) Module 03

<i>Description</i>	<i>Part Number</i>	<i>Reference Counter</i>	<i>Limit</i>	<i>Unit</i>
HP turbine blade (Note)	229226A2M0	CSN1	10,000	CYCLE
		CRD	261	PERCENT
	229226A2N0	CSN1	10,000	CYCLE
		CRD	261	PERCENT
	229226A560	CSN1	10,000	CYCLE
		CRD	261	PERCENT

Note: When the first limit is reached: remove M03, send it back to a Turbomeca approved repair center for gas generator turbine blades replacement or replace the gas generator turbine (deep maintenance : MTI X2921M13082).

(2) Module 04

Effectivity: D

Description	Part Number	Reference Counter	Limit	Unit
Power turbine blade	229281A440	TSN	6,000	FH
		CSN2	10,000	CYCLE
Power turbine nut	0292810450	TSN	6,000	FH

(3) Module 05

Description	Part Number	Reference Counter	Limit	Unit
Sleeve assy	0292717600	TSN	6,000	FH
Splined nut	0292710510	TSN	6,000	FH

(4) Out of module

Description	Part Number	Reference Counter	Limit	Unit
Free wheel	9560901230	TSN	5,000	FH
Bearing	9606490606	TSN	5,000	FH
	9606651001	TSN	5,000	FH
	9606681001	TSN	5,000	FH
Free wheel shaft	0292900230	CSN3	120,000	CYCLE
Free wheel flange	0292900250	CSN3	90,000	CYCLE

NOTE: The limits of the free wheel are under the helicopter manufacturer responsibility. In case of difference between the Engine MM and the AMM, the AMM remains the reference to take into account.

NOTE: The free wheel shaft and the splined sleeve are considered by the helicopter manufacturer as life limited parts written in the airworthiness limitations section of the AMM, Service Life Limit (SLL).

TASK 05-15-01-200-801-A01

FREQUENCIES - INSPECTION FREQUENCIES

CAUTION: ALL INSPECTIONS MUST BE PERFORMED BY QUALIFIED PERSONNEL.

CAUTION: ALL MAINTENANCE OPERATIONS MUST BE PERFORMED BY QUALIFIED MECHANICS.

1. INSPECTION FREQUENCIES

A. Maintenance tasks - Definition

These tasks must be performed during servicing inspections, scheduled inspections or unscheduled inspections.

(1) Mandatory maintenance tasks

Refer to Airworthiness Limitations - Task 05-10-10-200-801.

Operations to be performed to comply with Airworthiness objectives are listed in the table of mandatory maintenance tasks.

(2) Manufacturer required maintenance tasks

Refer to Task 05-20-10-200-801 and Task 05-50-00-200-801.

The manufacturer considers that the manufacturer required maintenance tasks must be carried out at the scheduled inspection frequency. Failure to do so may cause occurrences liable to affect the engine operating safety.

The information (frequency and/or related maintenance tasks) may be adapted after approval from the manufacturer (TURBOMECA) and supervision authorities.

(3) Optional maintenance tasks

Refer to Task 05-20-10-200-801.

Optional maintenance tasks are recommended by the manufacturer as a means of improving reliability, increasing operational availability and reducing operating costs.

The information (frequency and/or related maintenance tasks) may be adapted after approval from the manufacturer (TURBOMECA) and supervision authorities.

B. Frequency

CAUTION: REGULARLY RECORD THE NUMBER OF FLIGHT HOURS IN THE ENGINE LOG BOOK.

(1) Servicing inspections

Refer to Task 05-10-10-200-801 and Task 05-20-10-200-801.

Servicing inspections are to be performed at varying intervals from the following inspections:

- Inspection before the first flight of the day
- Turn-around inspection
- Inspection after 15 flight hours or 7 days (first limit reached).

(a) Inspection before the first flight of the day

Effectivity: D

This inspection is performed to make sure that the engine is in flight condition (it may have been subjected to corrective maintenance operations following the inspection after 15 flight hours or 7 days (first limit reached)).

(b) Turn-around inspection

This inspection requires a reduced number of operations.

This inspection is performed to make sure that the engine is in flight condition.

This inspection is independent of refuelling, or of any mission-specific preparation operations.

(c) Inspection after 15 flight hours or 7 days (first limit reached).

This inspection is performed so that certain checks can be carried out more frequently than just during scheduled inspections.

CAUTION: RECORD THE MAINTENANCE TASKS PERFORMED DURING THESE INSPECTIONS IN THE ENGINE LOG BOOK.

(2) Scheduled inspections

Refer to Task 05-10-10-200-801 and Task 05-20-10-200-801.

Each task to be performed is assigned a frequency.

Scheduled inspections are performed at regular intervals with an allocated tolerance.

Frequency may be expressed according to units defined in Task 05-15-00-200-801.

NOTE: When a frequency is expressed in hours, days or calendar month, the inspection must be carried out at the first limit reached.

The frequencies of manufacturer required maintenance tasks and optional maintenance tasks, prescribed for the engine and its equipment/accessories are basic and may change according to the type of operations and experience gained.

Maintenance operations must be performed within the intervals defined in the related tables.

CAUTION: RECORD THE MAINTENANCE TASKS PERFORMED DURING THESE INSPECTIONS IN THE ENGINE LOG BOOK.

(3) Unscheduled inspections

Refer to Task 05-10-10-200-801 and to Task 05-50-00-200-801.

Unscheduled inspections are linked to engine use in specific conditions.

Tasks related to unscheduled inspections must be performed prior to the next flight.

TASK 05-20-10-200-801-A01

**SCHEDULED INSPECTIONS -
SUMMARY TABLE OF SERVICING INSPECTIONS
AND SCHEDULED INSPECTIONS**

CAUTION: ALL INSPECTIONS MUST BE PERFORMED BY QUALIFIED PERSONNEL.

CAUTION: ALL MAINTENANCE OPERATIONS MUST BE PERFORMED BY QUALIFIED MECHANICS.

CAUTION: REGULARLY RECORD THE NUMBER OF FLIGHT HOURS AND CREEP DAMAGE COUNTER VALUE IN THE ENGINE LOG BOOK.

CAUTION: RECORD THE MAINTENANCE TASKS PERFORMED DURING THESE INSPECTIONS IN THE ENGINE LOG BOOK.

CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN TASKS 05-20-10, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.

1. SUMMARY TABLE OF SERVICING INSPECTIONS AND SCHEDULED INSPECTIONS**A. General**

These tables are work reference tools for the operator. They list, in order of frequency, all mandatory, manufacturer required, and optional scheduled inspection tasks. The operator may make a copy of these tables and fill in "date" and "signature" cells, once the tasks have been performed.

Mandatory tasks are listed in Task 05-10-10-200-801 in the Airworthiness Limitations section approved by the Airworthiness authorities.

B. Conditions of application

Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator.

C. Use of the summary table

Maintenance tasks defined by their designation and number are classified in order of frequency then:

- By level (M: Mandatory, R: manufacturer Required or OP: Optional)
- By application conditions (engine installed, engine removed, ground run, in flight, engine cranking, etc.).

D. List of inspections

- (1) Servicing inspections
 - Inspection before the first flight of the day (Refer to Task 05-20-10-201-801)
 - Turn-around inspection (between flight) (Refer to Task 05-20-10-201-803)

Effectivity: D

Scheduled inspections

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- Inspection after 15 flight hours or 7 days (Refer to Task 05-20-10-201-810).
- (2) Scheduled inspections
 - Inspection at 25 flight hours (Refer to Task 05-20-10-201-812)
 - Inspection at 300 flight hours (Refer to Task 05-20-10-201-835)
 - Inspection at 800 flight hours (Refer to Task 05-20-10-201-855)
 - Inspection at 4,000 flight hours (Refer to Task 05-20-10-201-890).
 - Inspection at 5,000 flight hours (Refer to Task 05-20-10-201-900)
 - Inspection at 15 years (Refer to Task 05-20-10-201-940)

NOTE: *Do the rinsing, washing, cleaning of the engine at the frequencies defined in Task 71-01-00-610-801.*

INSPECTION BEFORE THE FIRST FLIGHT OF THE DAY		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Remove the blanks and make sure that there are no foreign objects: examine near the air intakes and the exhaust zone	-	R	Before first	NA	FLIGHT	DAILY_FLIGHT	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
Inspection of oil level in tank and top up if required	Refer to Aircraft Maintenance Manual	R	Before first	NA	FLIGHT	DAILY_FLIGHT	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								

Effectivity: D

Inspection before the first flight of the day

The information in this manual is subject to the warning given on the information page.

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TURN-AROUND INSPECTION (BETWEEN FLIGHT)		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
Maintenance tasks	Task No.	Level	Periodicity	Tolerance	Unit	Reference Counter	Operating condition	Date/Signature
Make sure that nothing is flowing through the main drain of the engine deck.	Refer to Aircraft Maintenance Manual	M	Before each	NA	FLIGHT	DAILY_FLIGHT	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>								
In the engine log book, record the number of C1 and C2 cycles.	05-10-02-200-801	M	Before each	NA	FLIGHT	DAILY_FLIGHT	If the automatic counting is not available	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>								
Inspection of oil level in tank and top up if required	Refer to Aircraft Maintenance Manual	R	Before each	NA	FLIGHT	DAILY_FLIGHT	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>								

Effectivity: D

Turn-around inspection (between flight)

The information in this manual is subject to the warning given on the information page.

05-20-10-201-803-A01

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INSPECTION AFTER 15 FLIGHT HOURS OR 7 DAYS		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
Maintenance tasks	Task No.	Level	Periodicity	Tolerance	Unit	Reference Counter	Operating condition	Date/Signature
Make sure that the automatic cycle counting is correct.	05-10-02-200-801	M	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
In the engine log book, record the total number of C1 and C2 cycles consumed as counted by the EECU.	05-10-02-200-801	M	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
Visually examine the engine and the engine floor for leakage	-	M	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
Visually examine the engine attachments for signs of impact or deterioration.	Refer to Aircraft Maintenance Manual	M	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								

Effectivity: D

Inspection after 15 flight hours or 7 days

The information in this manual is subject to the warning given on the information page.

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CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory		R: Manufacturer required				OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Visually examine the fire protection of the shut-off valve for signs of deterioration.	-	M	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Visually examine the HMU for signs of impact or deterioration.	-	M	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Record the values from the creep damage counter in the engine logbook.	05-15-00-200-801	R	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
Record in the engine logbook the accumulation of flying hours.	05-15-00-200-801	R	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
Check that the HP gas generator rotates freely (no abnormal noises) and visually check that the engine is in good condition	-	R	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Manually or during a dry crank cycle</i>								
Manually check that the power turbine rotates freely (no abnormal noises)	-	R	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								

Effectivity: D

Inspection after 15 flight hours or 7 days

The information in this manual is subject to the warnings given on the information page.

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CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Inspection of oil level in tank and top up if required	Refer to Aircraft Maintenance Manual	R	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter. Within 15 minutes following engine shut-down.</i>								
Make sure that there are no foreign objects: examine near the air intakes and the exhaust zone. Install the blanks	-	R	Every 15	NA	FH	TSN	ALL	
			Every 7	NA	DAY	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter.</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

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Inspection after 15 flight hours or 7 days

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<u>INSPECTION AT 25 FLIGHT HOURS</u>		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Engine health inspection	Refer to Aircraft Flight Manual	M	Every 25	+2 . 5	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Refer to Aircraft Flight Manual</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-812-A01

Inspection at 25 flight hours

Page 1
June 15/2021

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INSPECTION AT 300 FLIGHT HOURS		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
Maintenance tasks	Task No.	Level	Periodicity	Tolerance	Unit	Reference Counter	Operating condition	Date/Signature
Module 02 - Axial compressor - Erosion check.	72-00-32-200-801	R	Every 300	+30	FH	TSN	Erosive atmosphere and airframe not fitted with an adapted sand filter (a sand filter is adapted if its demonstrated filtration efficiency is ≥ 98% per Standard ISO 5011 with ISO 12103 - A4 (ISO Coarse) test dust).	
Component standard for above task : ALL Application conditions of above task: Engine installed on helicopter or engine removed								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-835-A01

Inspection at 300 flight hours
Page 1
June 30/2018

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS**M: Mandatory****R: Manufacturer required****OP: Optional**

<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Module 02 - Axial compressor - Erosion check.	72-00-32-200-801	R	Every 300	+30	FH	TSN	Erosive atmosphere and airframe fitted with an adapted sand filter that has a cumulated by-pass opening time \geq 300 hrs (a sand filter is adapted if its demonstrated filtration efficiency is \geq 98% per Standard ISO 5011 with ISO 12103 - A4 (ISO Coarse) test dust).	

*Component standard for above task : ALL**Application conditions of above task: Engine installed on helicopter or engine removed*

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-835-A01

Inspection at 300 flight hours

Page 2

June 30/2018

INSPECTION AT 800 FLIGHT HOURS		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Boroscope inspection of combustion chamber including nozzle guide vane.	72-00-43-200-802	M	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Functional check in the auxiliary mode (EBCAU test)	Refer to Aircraft Flight Manual	M	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Ground run</i>								
Module 03 - Turbine-casing drain valve assembly - Test.	71-71-00-700-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Ground run</i>								
Module 03 - Checking of fluids discharged during injection wheel bleeding and checking of fluids discharged in tank fuel return pipe.	73-14-00-700-802	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Ground run</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-855-A01

Inspection at 800 flight hours

Page 1

June 15/2021

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

M: Mandatory		R: Manufacturer required				OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Module 02 - Axial compressor - Erosion check.	72-00-32-200-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Mechanical magnetic plug - Magnetism test.	79-36-00-700-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Test of the magnetism of the electrical magnetic plug.	79-38-00-700-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Test of the electrical magnetic plug.	79-38-00-750-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Oil system - Draining.	79-00-00-610-801	R	Every 800	+80	FH	TSN	Operation in erosive or fouling atmosphere or operation with 3 cSt oil	
			Every 12	+1	MONTH	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
Oil system - Draining.	79-00-00-610-801	R	Every 800	+80	FH	TSN	Operation with 5 cSt oil	
			Every 24	+2	MONTH	-		
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								

Effectivity: D

Inspection at 800 flight hours

The information in this manual is subject to the warnings given on the information page.

05-20-10-201-855-A01

Page 2

June 15/2021

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Module 03 - Permeability check of the injection wheel.	72-00-43-200-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Replacement of the fuel filtering element.	73-23-14-900-802	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Bleed valve filter - Check and inspection.	75-31-00-200-802	R	Every 800	+80	FH	TSN	ALL	
<i>Component minimum standard for above task: PRE TU 94</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Bleed valve filtering kit - Filter element replacement.	75-61-00-950-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component minimum standard for above task: POST TU 94</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Check of mechanical magnetic plug.	79-36-00-900-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								
Replacement of the oil filtering element.	79-21-00-900-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Module 03 - Preformed packing of rear bearing ducts - Replacement.	72-43-00-900-806	R	Every 800	+80	FH	TSN	ALL	
<i>Component minimum standard for above task: PRE TU 181</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								

Effectivity: D

Inspection at 800 flight hours

The information in this manual is subject to the warning given on the information page.

05-20-10-201-855-A01

Page 3
June 15/2021

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

M: Mandatory

R: Manufacturer required

OP: Optional

<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Module 03 - Inspection of the ignition system.	72-43-00-200-806	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine running</i>								
Exhaust pipe - Check and inspection.	72-70-00-200-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Module 01 - Engine front support - Check and inspection.	72-61-00-200-805	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Inspection of pyrometric harness.	77-21-00-210-801	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Boroscope inspection of HP turbine blades and HP turbine nozzle guide vane	72-00-43-200-803	R	Every 800	+80	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-855-A01

Inspection at 800 flight hours

Page 4

June 15/2021

INSPECTION AT 4,000 FLIGHT HOURS		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
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M: Mandatory			R: Manufacturer required			OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Inspect constant ΔP valve (including membrane replacement and functional test of auxiliary valve).	73-23-00-900-801	M	Every 4,000	NA	FH	TSN	ALL	
<i>Component standard for above task : ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Note: remove HMU and send it back to a Turbomeca approved repair center.								
Check the start injector purge valve of Adjusted Valve Assembly.	73-14-00-700-801	M	Every 4,000	NA	FH	TSN	ALL	
<i>Component standard for above task : ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter</i>								

Effectivity: D

Inspection at 4,000 flight hours

The information in this manual is subject to the warning given on the information page.

05-20-10-201-890-A01

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INSPECTION AT 5,000 FLIGHT HOURS		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Remove and send Module 03 back to Safran Helicopter Engines approved repair center or apply Maintenance Technical Instruction to send back HP turbine wheel only for visual inspection of HP turbine wheel fir-tree roots for clogging. If one of the fir-tree root is completely clogged, discard HP turbine disc.	72-00-43-900-801	M	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine or module removed</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-900-A01

Inspection at 5,000 flight hours

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

M: Mandatory

R: Manufacturer required

OP: Optional

<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Remove engine or Module 03 and send it back to Safran Helicopter Engines approved repair center for checking that the HP turbine containment shield is free from crack using dye penetrant inspection. If presence of crack, discard the HP turbine containment shield.	72-00-43-900-801	M	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine or module removed</i>								
Remove engine or module 03 and send it back to Safran Helicopter Engines approved repair center for checking that the power turbine containment shield is free from crack using dye penetrant inspection. If presence of crack, discard the Power Turbine containment shield.	72-00-43-900-801	M	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine or module removed</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-900-A01

Inspection at 5,000 flight hours

Page 2

Dec. 30/2021

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

M: Mandatory		R: Manufacturer required				OP: Optional		
Maintenance tasks	Task No.	Level	Periodicity	Tolerance	Unit	Reference Counter	Operating condition	Date/Signature
<p>Prior to sending back the module 04 for overhaul to Safran Helicopter Engines :</p> <p>Check the pipe nut tightening of the power turbine pressurization pipe.</p> <p>Remove and check the power turbine pressurization pipe with magnifying glass x6, and its nipple on the module 05.</p> <p>The power turbine wheel (disc and blades) has to be scrapped at Safran Helicopter Engines if either:</p> <ul style="list-style-type: none"> - the PT pressurization pipe presents a through-going crack, - the PT pressurization pipe is ruptured, - the PT pressurization pipe nut is found loose, - the air path section is reduced in the nipple. <p>Record the mandatory scrapping of the power turbine wheel (disc and blades) at its next removal from the M04, in the engine logbook, in section E and on the logcard of Module 04.</p> <p>AND</p> <ul style="list-style-type: none"> - If the PT pressurization pipe presents a crack or is ruptured : replace the pipe, - If pipe nut is loose: tighten the nut, - If nipple and/or PT pressurization pipe are polluted : clean nipple and/or PT pressurization pipe. 	75-29-00-900-806	M	Every 5,000	+500	FH	TSN	ALL	

Component standard for above task: **ALL**

Application conditions of above task: **Engine removed**

Effectivity: D

Inspection at 5,000 flight hours

The information in this manual is subject to the warning given on the information page.

05-20-10-201-900-A01

Page 3
Dec. 30/2021

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

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OP: Optional

<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Remove oil filter unit, send it back to a Safran Helicopter Engines approved Repair Center for oil filter bypass (non opening, threshold) check	79-21-00-900-803	R	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine removed</i>								
Functional test of oil pressure transmitter.	79-32-00-750-801	R	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								
Functional test of oil pressure and temperature transmitter.	79-33-00-750-801	R	Every 5,000	+500	FH	TSN	ALL	
<i>Component standard for above task: ALL</i>								
<i>Application conditions of above task: Engine installed on helicopter or engine removed</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-900-A01

Inspection at 5,000 flight hours

Page 4

Dec. 30/2021

<u>INSPECTION AT 15 YEARS</u>		CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY SCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.						
		NOTE: <i>Maintenance operations must be performed before the maximum frequency (frequency + tolerance) is reached. As long as these intervals are respected, scheduling of maintenance operations will be left at the discretion of the operator. Each maintenance operation can be scheduled independently.</i>						
CAUTION: USE THE FIRST LIMIT REACHED WHEN SEVERAL LIMITS APPEAR FOR THE SAME TASK.								
CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS								
M: Mandatory			R: Manufacturer required			OP: Optional		
<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Level</i>	<i>Periodicity</i>	<i>Tolerance</i>	<i>Unit</i>	<i>Reference Counter</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Remove and send the Module 03 to a certified Maintenance Center for calendar inspection.	71-02-16-280-801	R	Every 15	+1.5	YEAR	-	ALL	
<i>Component standard for above task : ALL</i>								
<i>Application conditions of above task: Engine removed</i>								

Effectivity: D

The information in this manual is subject to the warning given on the information page.

05-20-10-201-940-A01

Inspection at 15 years

Page 1

June 30/2018

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ARRIEL 2 D

TASK 05-50-00-200-801-A01

UNSCHEDULED INSPECTIONS

CAUTION: ALL INSPECTIONS MUST BE PERFORMED BY QUALIFIED PERSONNEL.

CAUTION: ALL MAINTENANCE OPERATIONS MUST BE PERFORMED BY QUALIFIED MECHANICS.

CAUTION: REGULARLY RECORD THE NUMBER OF FLIGHT HOURS IN THE ENGINE LOG BOOK.

CAUTION: RECORD THE MAINTENANCE TASKS PERFORMED DURING THESE INSPECTIONS IN THE ENGINE LOG BOOK.

CAUTION: SHOULD THERE BE ANY DISCREPANCY BETWEEN THE MANDATORY UNSCHEDULED MAINTENANCE INSPECTION TASKS LISTED IN TASK 05-10-10-200-801 AND THOSE LISTED IN THIS TASK, REFER TO TASK 05-10-10-200-801 WHICH IS THE ONLY ONE APPROVED BY THE AIRWORTHINESS AUTHORITIES.

1. UNSCHEDULED INSPECTIONS

A. **Unscheduled inspections - General**

Refer to Task 05-15-01-200-801.

B. **List of unscheduled maintenance inspections**

NOTE: *If an occurrence is not listed below, contact Safran Helicopter Engines.*

- (1) Mandatory unscheduled maintenance tasks

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS

Maintenance tasks	Task No.	Operating condition	Date/Signature
Limit the life of Power Turbine Wheel to 5,500 FH since last M04 overhaul in addition to disc and blades limits, scrap at first limit reached. In the engine logbook, in section E and on the logcard of Module 04: Record the mandatory scrapping of the power turbine wheel (disc and blades) at its next removal from the M04. AND - If PT pressurization pipe presents a through-going crack or is ruptured : replace the PT pressurization pipe, - If pipe nut is loose: tighten the nut, - If nipple and/or PT pressurization pipe are polluted : clean nipple and or PT pressurization pipe.	75-29-00-900-806	If either : the power turbine pressurization pipe presents a through-going crack, or this PT pressurization pipe is ruptured, or the pipe nut is found loose, or the air path section is reduced in the nipple of this PT pressurization pipe.	
Component standard for above task: ALL Application conditions of above task: Engine installed on helicopter or engine removed			

(2) After operating the engine beyond limitations

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Maintenance tasks	Task No.	Operating condition	Date/Signature
Exceeding of T4.5 temperature.	71-00-01-940-801	At start	
Component standard for above task: ALL Application conditions of above task: Engine installed on helicopter			
Note: record the excess (duration and value of T4.5) on the engine log book.			
Exceeding of T4.5 temperature.	71-00-01-940-801	During a flight	
Component standard for above task: ALL Application conditions of above task: Engine installed on helicopter			
Note: record the excess (duration and value of T4.5) on the engine log book.			
Exceeding of N1 speed.	71-00-01-940-801	ALL	
Component standard for above task: ALL Application conditions of above task: Engine installed on helicopter			
Note: record the excess (duration and value of N1) on the engine log book.			
Exceeding of N2 speed.	71-00-01-940-801	ALL	
Component standard for above task: ALL Application conditions of above task: Engine installed on helicopter			
Note: record the excess (duration and value of N2) on the engine log book.			
Exceeding of engine torque.	71-00-01-940-801	ALL	
Component standard for above task: ALL Application conditions of above task: Engine installed on helicopter			
Note: record the excess (duration and value of Tq) on the engine log book.			

Effectivity: D

Unscheduled inspections

(3) After the use of fire extinguishers

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS			
Maintenance tasks	Task No.	Operating condition	Date/Signature
Treatment of an engine after the operation of an extinguisher.	71-02-01-280-801	After extinction of a fire or accidental release of an extinguisher on a hot turboshaft engine	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>			
Treatment of an engine after the operation of an extinguisher.	71-02-01-280-802	Accidental release of an extinguisher on a cold turboshaft engine without any extinguishing product entering the air path	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>			

(4) After an occurrence during operation

CAUTION: IF USING A COPY OF THIS PAGE, MAKE SURE IT HAS BEEN COPIED FROM A MANUAL THAT CONTAINS ALL THE LATEST REVISIONS			
Maintenance tasks	Task No.	Operating condition	Date/Signature
Treatment of an engine after a foreign object damage.	71-02-03-280-801	After ingestion of foreign bodies	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>			
Treatment of an engine after a lightning strike.	71-02-04-280-801	After a lightning strike	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>			
Treatment of an engine after a heavy landing.	71-02-06-280-801	After heavy landing	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine running</i>			
Treatment of an engine after a surge.	71-00-06-813-801	After surge	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine running</i>			
Parameter instability - Oil pressure.	71-00-06-814-808	Abnormal evolution of the oil pressure	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>			
Treatment of an engine after a rotor damage.	71-02-05-280-801	After rotor damage	
<i>Component standard for above task: ALL</i> <i>Application conditions of above task: Engine installed on helicopter</i>			

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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Treatment of an engine after rupture of the engine/MGB link.	71-02-05-280-802	After rupture of the engine/MGB link	
<i>Component standard for above task: ALL</i>			
<i>Application conditions of above task: Engine installed on helicopter</i>			
Treatment of an engine after a fire.	71-02-01-280-803	After a fire	
<i>Component standard for above task: ALL</i>			
<i>Application conditions of above task: Engine installed on helicopter</i>			
Treatment of an engine after immersion in water.	71-02-01-280-804	After immersion in water	
<i>Component standard for above task: ALL</i>			
<i>Application conditions of above task: Engine installed on helicopter</i>			

(5) After operating the engine in a particular atmosphere

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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Frequency of cleaning.	71-01-00-610-801	Corrosive or erosive or fouling atmosphere.	
<i>Component standard for above task: ALL</i>			
<i>Application conditions of above task: Engine installed on helicopter</i>			

(6) After an occurrence outside operation

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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Treatment of an accidentally dropped engine	71-02-02-280-801	Accidental dropping of turboshaft engine	
<i>Component standard for above task: ALL</i>			
<i>Application conditions of above task: Engine removed from helicopter</i>			

(7) After a maintenance procedure

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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Oil system rinsing.	79-00-00-610-802	In case of oil system contaminated, or type of oil changed, or module used with a different type of oil installed	

Component standard for above task: **ALL**

Application conditions of above task: **Engine installed on helicopter**

- (8) After a microbiological contamination of the fuel

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<i>Maintenance tasks</i>	<i>Task No.</i>	<i>Operating condition</i>	<i>Date/Signature</i>
Treatment of an engine after a microbiological contamination of the fuel	71-02-17-280-801	After a microbiological contamination of the fuel	

Component standard for above task: **ALL**

Application conditions of above task: **Engine installed on helicopter**

- (9) Post-maintenance inspections
Refer to Figure 1

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INSPECTIONS		Update of EDR data 77-33-10-280-801	Ground run 71-02-13-280-801	Vibration 71-02-10-760-801	Turbine rundown time 71-02-09-760-801	Check of oil pressure 79-00-00-200-801	Engine health inspection Refer to Flight Manual	Record MGB cycles (CSN3) in the equipped free wheel assembly logcard
- Before engine return to maintenance (level 3 or 4) (refer to Task 71-02-16-280-801)			X	X			X	X
- Before module/equipment return to maintenance (level 3 or 4): (refer to Task 71-02-16-280-801)								
	Module 01		X	X		X	X	
	Module 02		X	X		X	X	
	Module 03		X	X	X	X	X	
	Module 04		X	X		X	X	
	Module 05		X	X		X		
	Equipped free wheel assy							X
- After engine installation		X	X	X	X		X	
- After module installation:								
	Module 01	X	X	X		X	X	
	Module 02		X	X		X	X	
	Module 03	X	X	X	X	X	X	
	Module 04	X	X	X		X	X	
	Module 05	X	X	X		X		
- Removal/Installation of an accessory or a pipe:								
	Oil system		X					
	Air system		X					
	Fuel system		X					
	Fuel control		X					

Post-maintenance inspections
Figure 1

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Unscheduled inspections

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