Annex
A Preservation

A.1. Preservation for a Period of up to 30 Days

** ON A/C 001-010, 012-099, 201-299

TASK 72-00-00-600-001

Preservation for a Period of up to 30 Days

1. **Reason for the Job**

Self Explanatory

2. **Job Set-up Information**

A. Fixtures, Tools, Test and Support Equipment

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>QTY</th>
<th>DESIGNATION</th>
</tr>
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<tbody>
<tr>
<td>856A2782</td>
<td>1</td>
<td>COVER-FITTED BARE QEC'D ENGINE SHIPPING</td>
</tr>
</tbody>
</table>

B. Consumable Materials

3. **Job Set-up**

Subtask 72-00-00-869-050

A. Not Applicable

4. **Procedure**

Subtask 72-00-00-620-050

A. Period of up to 30 days - Operable engine

(1) On-wing installed engines.
(a) Start the engines (Ref. AMM TASK 71-00-00-710-003) and let them become stable at ground idle for 15 to 20 minutes, followed by a thrust reverser cycle (Ref. AMM TASK 78-31-00-710-040). Stop the engines (Ref. AMM TASK 71-00-00-710-028).

**NOTE:** You can ignore this step if you did it during the last engine operation (flight cycle). Under these conditions, consider the engine is preserved for 30 days from time of last operation.

(b) Cover entrance to fan inlet cowl and exit openings.

**CAUTION:** OPERATION SHOULD BE CARRIED OUT IN A CONFINED SPACE WITH SUFFICIENT VENTILATION AND ON A FLAT HORIZONTAL SURFACE.
A.2. Preservation for a Period of up to 90 Days

** ON A/C 001-010, 012-099, 201-299

TASK 72-00-00-600-002

Preservation for a Period of up to 90 Days.

1. Reason for the Job

You must do the preservation procedure at the end of engine operation or not earlier than one day before an engine return to shop when the engine must not operate for a period of up to 90 days.

This procedure is only applicable to on-wing installed engines.

2. Job Set-up Information

A. Consumable Materials

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP2442</td>
<td>* engine oil (Ref. 70-30-00)</td>
</tr>
<tr>
<td>CP5067</td>
<td>* Lubrication System Corrosion Preventive Oil (Ref. 70-30-00)</td>
</tr>
<tr>
<td>CP5075</td>
<td>* Corrosion Preventive Additive (Ref. 70-30-00)</td>
</tr>
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</table>

B. Referenced Information

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
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<tbody>
<tr>
<td>12-13-79-610-001</td>
<td>Check Oil Level and Replenish</td>
</tr>
<tr>
<td>71-00-00-710-003</td>
<td>Engine Automatic Start</td>
</tr>
<tr>
<td>71-00-00-710-028</td>
<td>Engine Shutdown</td>
</tr>
<tr>
<td>78-31-00-710-040</td>
<td>Operational Test of the Thrust Reverser System</td>
</tr>
</tbody>
</table>
3. Job Set-up

Subtask 72-00-00-869-051

A. Not Applicable

4. Procedure

Subtask 72-00-00-620-051

**CAUTION:** IF ENGINE WAS FERRIED OR SUBJECTED TO AN IN FLIGHT SHUTDOWN (IFSD), ENGINE MUST BE "DRIED OUT" AND RELUBRICATED WITHIN 24 HOURS PER DRY OUT PROCEDURE OF THIS SECTION.

A. Period of up to 90 days

Subtask 72-00-00-620-066

B. Operable Engine Preservation - Period of up to 90 days

(1) Do the servicing of the oil tank with an approved mixture of Material No CP2442 (engine oil (Material No. CP2442)) and at least 5 percent of Material No CP5067 (Lubrication System Corrosion Preventive Oil (Material No. CP5067)) or, as an alternative, 7 percent Material No CP5075 (Corrosion Preventive Additive (Material No. CP5075)) by volume (Ref. AMM TASK 12-13-79-610-001).

**NOTE:** In both cases, a minimum of 19 l (5 USgal) of oil mixture is required for preservation motoring.

(2) Start the engine (Ref. AMM TASK 71-00-00-710-003) and let it become stable at ground idle for 15-20 minutes, followed by a thrust reverser cycle (Ref. AMM TASK 78-31-00-710-040) and shutdown (Ref. AMM TASK 71-00-00-710-028).

(3) Cover the entrance to fan inlet cowl and exit openings of exhaust nozzle.

**NOTE:** For a period of up to 90 days, the preservation of the fuel system is not necessary.

Subtask 72-00-00-620-067

C. Alternative Procedure. Operable Engine Preservation one day before the Preservation Plan -
Period of Up to 90 days.

(1) Do the servicing of the oil tank with an approved mixture of Material No CP2442 (engine oil (Material No. CP2442)) and at least 5 percent of Material No CP5067 (Lubrication System Corrosion Preventive Oil (Material No. CP5067)) by volume (Ref. AMM TASK 12-13-79-610-001).

NOTE: In this case, a minimum of 19l (5 US gal) of oil mixture is required for preservation motoring.

NOTE: It is not permitted to use Material No CP5075 (Corrosion Preventive Additive (Material No. CP5075)) for this procedure.

NOTE: In this procedure, it is not necessary to do the ground idle run.

(2) Cover the entrance to fan inlet cowl and exit openings of exhaust nozzle.

NOTE: For a period of up to 90 days, the preservation of the fuel system is not necessary.
A.3. Preservation Renewal Requirements

** ON A/C 051-200

TASK 72-00-00-600-804

Preservation Renewal Requirements

1. Reason for the Job

Self Explanatory

2. Job Set-up Information

A. Referenced Information

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>72-00-00-600-801</td>
<td>Preservation for a Period up to 30 Days</td>
</tr>
<tr>
<td>72-00-00-600-802</td>
<td>Preservation for a Period up to 90 Days</td>
</tr>
<tr>
<td>72-00-00-600-803</td>
<td>Preservation for a Period of 30 to 365 Days</td>
</tr>
</tbody>
</table>

3. Job Set-up

Subtask 72-00-00-869-053

A. Not applicable.

4. Procedure

Subtask 72-00-00-620-053

A. Period Up to 30 Days

(1) Operable engine.

(a) Two renewals are permitted [Ref. AMM TASK 72-00-00-600-801].
(b) Then the engine must be preserved \(\text{(Ref. AMM TASK 72-00-00-600-803)}\).

(2) Non-operable engine.

(a) No renewal is permitted.

Subtask 72-00-00-620-058

B. Period Up to 90 Days - Operable Engine

(1) Operable engine

(a) One renewal is permitted \(\text{(Ref. AMM TASK 72-00-00-600-802)}\).

(b) Then the engine must be preserved \(\text{(Ref. AMM TASK 72-00-00-600-803)}\).

Subtask 72-00-00-620-059

C. Period 30 to 365 Days - Operable Engine

(1) Operable engine.

(a) Repeat the full procedure of preservation \(\text{(Ref. AMM TASK 72-00-00-600-803)}\).

(b) Make sure that the engine is in a safe condition and that protective cover is tightly in place.

(2) Period 30 to 365 Days - Non-operable Engine

(a) No renewal is permitted. You must service the engine and be operable.
A.4. Procedure for Exceeded Long Term Preservation Period

** ON A/C 051-200

TASK 72-00-00-600-805
Procedure for Exceeded Long Term Preservation Period
1. **Reason for the Job**

You must do this procedure if you ignore the renewal procedure at the scheduled date.

2. **Job Set-up Information**

Not Applicable

3. **Job Set-up**

Subtask 72-00-00-869-054

A. Not applicable.

4. **Procedure**

Subtask 72-00-00-620-054

A. If the engine preservation period is expired, refer to your CFMI representative for instructions.

**NOTE:** You must use an engineering analysis to analyse the situation applicable to each specific case. You must analyse parameters such as total time beyond the preservation time limit, engine storage location and condition, humidity level, temperature variation, dessicant replacement interval, etc.
A.5. Dry Motoring

** ON A/C 051-200

71-00-00 PB 501 - POWER PLANT - GENERAL - ADJUSTMENT/TEST

TASK 71-00-00-720-802

Dry Motoring Check

1. Reason for the Job

The dry motoring check is necessary after inspection or maintenance.

2. Job Set-up Information

A. Fixtures, Tools, Test and Support Equipment

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>QTY</th>
<th>DESIGNATION</th>
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</thead>
<tbody>
<tr>
<td>No specific</td>
<td>access platform 2.5 m (8 ft. 2 in.)</td>
<td></td>
</tr>
<tr>
<td>No specific</td>
<td>adjustable access platform 4.3 m (14 ft. 1 in.)</td>
<td></td>
</tr>
</tbody>
</table>

B. Referenced Information

Subtask 71-00-00-869-050

A. Preparation for Test

NOTE: A chart is given to convert core or fan speed from percentage to actual Revolution per Minute (RPM).

(Ref. Fig. 506/TASK 71-00-00-991-030 SHEET 506.1)

(1) Wind limitations during Engine Ground Operations.

(a) Do not perform engine start if tailwinds exceed 25 knots.
(b) Static ground operation is restricted to power settings of 70 percent N1 RPM and below with winds exceeding 35 knots or with wind variations exceeding 5 knots.

(c) For other limitations

(Ref. Fig. 502/TASK 71-00-00-991-009 SHEET 502.1)

(d) Tailwinds, or winds with tailwind components, adversely affect ground operation of engines. During starting, and at idle or low power settings, excessive Exhaust Gas Temperature (EGT) can result. At power settings of approximately 90 percent N1 RPM and above, fan tip stall can be caused. The onset of fan tip stall during steady state operation may be recognized by unstable N1 RPM manifested by rapidly increasing excursions, airplane vibration and a pulsating or a blowtorch type of sound. Whenever a fan tip stall is imminent or has occurred, rapid retardation of the thrust lever will prevent or permit recovery from the stall.

NOTE: Electronic Control Unit (ECU) logic may prevent engine start with high tailwind.

(2) Make sure that the engine inlet and exhaust covers have been removed. Make sure that these areas are clear of any foreign objects.

(3) Make a visual check of the temperature sensors, fan inlet, and exhaust areas. If snow or ice has collected in the fan duct, make sure that the fan turns freely. Also, make sure that the engine inlet, inlet lip, fan, spinner, and exhaust duct are clear of ice or snow. If the fan does not turn freely, the engine should be thawed with hot air before an engine operation.

(4) Look at general condition of the fan spinner and fan blades, core exhaust nozzle, Low Pressure Turbine (LPT) and external surfaces of the cowls.

(5) Check oil quantity. Make a check of the drain ports for fuel, oil and hydraulic leaks. Also make sure that fuel drained from the engine can not cause a fire.

Subtask 71-00-00-861-052

B. Energize the ground service network

(Ref. AMM TASK 24-42-00-861-801).

Subtask 71-00-00-010-056

C. Get Access to the Avionics Compartment

(1) Put the access platform in position at the access door
(2) Open the access door 811.

(3) Open the protective door of the AC/DC emergency power-center 740VU.

** ON A/C 051-200

Subtask 71-00-00-869-051

** CAUTION:** MAKE SURE THAT THE HYDRAULIC RESERVOIR PRESSURE IS IN THE CORRECT OPERATING RANGE BEFORE YOU START THE ENGINE (THE HYDRAULIC FLUID IS NECESSARY TO LUBRICATE THE HYDRAULIC PUMPS THAT THE ENGINES OPERATE).

E. Continue to prepare for test.

(1) Supply the aircraft pneumatic system from a High Pressure (HP) ground power unit or the Auxiliary Power Unit (APU).

(2) Make sure that the pressure of the hydraulic reservoir is correct,

Yellow reservoir.

(3) Make sure that the engine 1, (2), (3), (4) fuel pump is serviceable (on the panel 245VU, the FAULT legend of the ENG 1, (2), (3), (4), PUMP pushbutton switch must be off).

(4) Do the EIS start procedure  *(Ref. AMM TASK 31-60-00-860-801)*.

4. Procedure

Subtask 71-00-00-710-052

A. Do this test.
1. Supply the engine with fuel.

**NOTE:** Activation of the fuel pumps and opening of the Low Pressure (LP) valve are not necessary if you did not disconnect/remove any fuel line or fuel equipment downstream of the LP valve, before **dry motoring**.

A. On the Hydraulic/Fuel Control panel 245VU:

- push the ENG1, (2), (3), (4) FUEL PUMP pushbutton switch. The OFF legends of this pushbutton switch goes off.

B. Open the circuit breaker 1KC1, (2), (3), (4) to open the LP FUEL valve.

2. Make sure that the throttle control lever of the engine 1, (2), (3), (4) is in the idle stop position (zero on the graduated sector).

3. On the Engine Start Control panel 145VU:

4. On the Overhead Right Control panel 212VU:

- push the ENG/MAN START VALVE/1, (2), (3), (4) pushbutton switch. The ON legend of this pushbutton switch comes on.

On the SD, ENGINE page:

- the symbol for the starter valve is in the open position.

5. Motor the engine as long as it is necessary (in line with the starter limits as given below).

6. Make sure that:

- the engine runs

- the oil pressure indication is positive.
7. On the Overhead Right Control panel 212VU:

- release the ENG/MAN START VALVE/1, (2), (3), (4) pushbutton switch. The ON legend of this pushbutton switch goes off.

On the SD, ENGINE page:
- the symbol for the starter valve is in the closed position.

8. On the Engine Start Control panel 145VU:

- set the ENG MODE selector switch to the NORM position. On the SD:
- the ENGINE page goes out view.

9. On the Electronic Centralized Aircraft Monitoring (ECAM) control panel:

- push the ENG key to get the ENGINE page on the SD. On the SD:
- the ENGINE page comes into view.

10. On the SD, ENGINE page:

- after a minimum of 5 minutes after the end of the test, look at the oil level indication. If necessary, fill the oil tank 12-13-79-610-801.

11. When the engine is shut down, on the Hydraulic/Fuel Control panel 245VU:

- release the ENG 1, (2), (3), (4) FUEL PUMP pushbutton switch. The OFF legends of no suggestions pushbutton switch comes on.

12. Close the circuit breaker 1KC1, (2), (3), (4) to close the LP valve. On the EWD the following message goes out of view:

Subtask 71-00-00-200-050

B. Listen for unusual noise.
(1) During engine coast listen for any unusual noise from the turning components of the engine.

NOTE: Clicking fan blades, gear noise and seal rubs are normal noise.

Subtask 71-00-00-055

C. Get Access

(1) Put an adjustable access platform in position.

(2) Open the fan cowl doors (Ref. AMM TASK 71-13-00-010-801):

Subtask 71-00-00-040-051

D. Make the thrust reverser unserviceable (Ref. AMM TASK 78-30-00-040-801).

Subtask 71-00-00-010-057

E. Get Access

(1) Open the thrust reverser doors (Ref. AMM TASK 78-36-00-010-801):

Subtask 71-00-00-210-050

F. Check for leaks.

POST SB CFM 73-036

NOTE: Hydromechanical Units (HMUs) that have fluorocarbon (Viton) external seals can leak fuel for a short period of time when they are below 0 deg.C (32 deg.F) (modification 1 and 2) (Ref. AMM TASK 71-00-00-790-802).

END POST SB CFM 73-036

(1) Make an inspection of the lubrication system lines, fittings and accessories for leaks.

5. Close-up
Subtask 71-00-00-869-052

A. Put the Aircraft back to its Initial Configuration

(1) Stop the pneumatic supply to the aircraft:

- disconnect the HP ground power unit or shut down the APU.

(2) Do the EIS stop procedure

(Ref. AMM TASK 31-60-00-860-802).

Subtask 71-00-00-410-054

B. Close Access

(1) Make sure that the work area is clean and clear of tools and other items.

(2) Close the thrust reverser doors (Ref. AMM TASK 78-36-00-410-801).

Subtask 71-00-00-440-051

C. Make the thrust reverser serviceable (Ref. AMM TASK 78-30-00-440-801).

Subtask 71-00-00-410-055

D. Close Access

(1) Close the protective door of the AC/DC emergency power center 740VU.

(2) Close the access door 811.

(3) Close the fan cowl doors (Ref. AMM TASK 71-13-00-410-801).
(4) Remove the access platform(s).

Subtask 71-00-00-862-051

E. De-energize the ground service network
A.6. Wet Motoring

TASK 71-00-00-720-803

Wet Motoring Check

**WARNING: DO NOT PERFORM WET MOTORING IN A HANGAR OR IN A CLOSED AREA.**

A LARGE QUANTITY OF HIGHLY FLAMMABLE FUEL VAPORS COME OUT FROM THE ENGINE DURING THIS PROCEDURE AND THERE IS A RISK OF FIRE.

1. Reason for the Job

Wet motoring is necessary for maintenance check where you must turn the engine and have fuel flow without ignition:

- leak check of the fuel system
- when engine is removed from storage

- to prime the engine fuel system.

2. Job Set-up Information

A. Fixtures, Tools, Test and Support Equipment

**ON A/C 051-200**

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>QTY</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>No specific</td>
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<td>circuit breaker(s) safety clip(s)</td>
</tr>
<tr>
<td>No specific</td>
<td></td>
<td>hot air blower</td>
</tr>
<tr>
<td>No specific</td>
<td></td>
<td>access platform 2.5 m (8 ft. 2 in.)</td>
</tr>
<tr>
<td>No specific</td>
<td></td>
<td>adjustable access platform 4.3 m (14 ft. 1 in.)</td>
</tr>
</tbody>
</table>
B. Referenced Information

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-13-79-610-801</td>
<td>Check of the Oil Level and Gravity Filling</td>
</tr>
<tr>
<td>24-41-00-862-801</td>
<td>De-energize the Aircraft Electrical Circuits from the External Power A</td>
</tr>
<tr>
<td>24-42-00-861-801</td>
<td>Energize the Ground Service Network</td>
</tr>
<tr>
<td>26-12-00-710-812</td>
<td>Operational Test of the Engine Fire and Overheat Detection (Loop/Squib)</td>
</tr>
<tr>
<td>71-00-00-790-802</td>
<td>Fuel or Oil Leakage Limits for CFM56-5C (NON/P) engine</td>
</tr>
<tr>
<td>71-13-00-010-801</td>
<td>Opening of the Fan Cowl Doors</td>
</tr>
<tr>
<td>71-13-00-410-801</td>
<td>Closing of the Fan Cowl Doors</td>
</tr>
</tbody>
</table>

3. Job Set-up

Subtask 71-00-00-869-053

A. Preparation for Test

NOTE: A chart is given to convert core or fan speed from percentage to actual Revolution per Minute (RPM).

(1) Wind limitations during engine ground operations.

(a) Do not perform engine start if tailwinds exceed 25 knots.

(b) Static ground operation is restricted to power settings of 70 percent N1 RPM and below with winds exceeding 35 knots or with wind variations exceeding 5 knots.

(c) For other limitation

(Ref. Fig. 502/TASK 71-00-00-991-009 SHEET 502.1)
(d) Tailwinds, or winds with tailwind components, adversely affect ground operation of engines. During starting, and at idle or low power settings, excessive Exhaust Gas Temperature (EGT) can result. At power settings of approximately 90 percent N1 RPM and above fan tip stall can be caused. The onset of fan tip stall during steady state operation may be recognized by unstable N1 RPM manifested by rapidly increasing excursions, airplane vibration and a pulsating or a blowtorch type of sound. Whenever a fan tip stall is imminent or has occurred, rapid retardation of the thrust lever will prevent or permit recovery from the stall.

**NOTE:** ECU logic may prevent engine start with high tailwind.

(2) Make sure that the engine inlet and exhaust covers have been removed. Also, look at these areas to make sure that they are clear of any foreign objects.

(3) Make a visual check of the temperature sensors, fan inlet, and exhaust areas. If snow or ice has collected in the fan duct, make sure that the fan turns freely. Also, make sure that the engine inlet, inlet lip, fan, spinner, and exhaust duct are clear of ice or snow. If the fan does not turn freely, the engine should be thawed with hot air before an engine operation.

(4) Look at general condition of the fan spinner and fan blades, core exhaust nozzle, Low Pressure Turbine (LPT) and external surfaces of the cowls.

(5) Check oil quantity. Make a check of the drain ports for fuel, oil and hydraulic leaks. Also make sure that fuel drained from the engine does not cause a fire.

Subtask 71-00-00-861-053

B. Energize the aircraft electrical circuits

*(Ref. AMM TASK 24-42-00-861-801).*

Subtask 71-00-00-010-058

C. Get Access to the Avionics Compartment

(1) Put the access platform in position at the access door 811.

(2) Open the access door 811.

(3) Open the protective door of the AC/DC emergency power-center 740VU.
Subtask 71-00-00-869-054

F. Continue to prepare for test.

(1) Do the Electronic Instrument System (EIS) start procedure (Ref. AMM TASK 31-60-00-860-801).

(2) Supply the aircraft pneumatic system from a High Pressure (HP) ground power unit or the Auxiliary Power Unit (APU).

(3) Make sure that fire-fighting personnel is present.

(4) On the Electronic Centralized Aircraft Monitoring (ECAM) control panel, push the HYD key to get the hydraulic page on the System Display (SD).

(a) Make sure that the pressure of the hydraulic reservoir is correct,

(b) Make sure that the reservoir fluid level is correct.

(5) Make sure that the engine 1, (2), (3), (4) fuel pump is serviceable (on the panel 245VU, the FAULT legend of the ENG 1, (2), (3), (4) PUMP pushbutton switch must be off).

Subtask 71-00-00-710-053

G. Do an operational test

(1) Do the operation test of the engine fire detection system

4. Procedure

Subtask 71-00-00-710-054-A

A. Do this test:

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. On the Hydraulic/Fuel Control panel 245VU: - push the ENG 1, (2), (3), (4) FUEL PUMP pushbutton - the OFF legend of this pushbutton</td>
<td></td>
</tr>
</tbody>
</table>

...
switch. switch goes off.

2. Make sure that the throttle control lever of the engine 1, (2), (3), (4) is in the idle stop position (zero on the graduated sector).

3. On the Engine Start Control panel 145VU:
   - set the ENG MODE selector switch to the CRANK position. On the SD:
     - the ENGINE page comes into view

4. On the Overhead Right Control panel 212VU:
   - push the ENG/MAN START VALVE/1, (2), (3), (4) pushbutton switch. On the SD, ENGINE page:
     - the symbol for the starter valve is in the open position.

5. When the N2 speed is between 15 and 20 percent, on the Engine Master Control panel 125VU:
   - set the ENG/MASTER 1, (2), (3), (4) switch to ON. On the EWD:
     - the fuel flow indication FF increases.
   - make sure that the oil pressure indication is positive.

**NOTE:** Do not turn the engine for more than 15 seconds with the ENG/MASTER 1, (2), (3), (4) switch in the ON position after a fuel flow of 300 lb.h (136 kg.h) is indicated.
6. On the Engine Master Control panel 125VU:

- set the ENG/MASTER 1, (2), (3), (4) switch to OFF.

On the EWD:

- The fuel flow indication decreases to zero.
- The symbol for the starter valve is in the closed position after the reset of the Electronic Control Unit (ECU)

7. On the Overhead Right Control panel 212VU:

- release the ENG/MAN START VALVE 1, (2), (3), (4) pushbutton switch.

On the SD:

- the symbol for the starter valve is in the closed position.

8. Dry motor the engine for 60 seconds.

This will dry the fuel that can be in the combustor.

- On the Overhead Right Control panel 212VU:

push the ENG/MAN START VALVE 1, (2), (3), (4) pushbutton switch.

- the ON legend of this pushbutton switch comes on.
- the ECU will command the starter air valve open when the core speed is below 20 percent.

On the SD:

- the symbol for the starter valve is in the open position.

9. After 60 seconds on the Overhead Right Control panel 212VU:

** ON A/C 051-200**
- release the ENG/MAN START VALVE 1, (2), (3), (4) pushbutton switch.
  - the ON legend of this pushbutton switch goes off.
  - the symbol for the starter valve is in the closed position.

10. On the Engine Start Control

On the SD:

- the ENGINE page goes out of view.

11. On the Hydraulic/Fuel Control

- release the ENG 1, (2), (3), (4) FUEL PUMP pushbutton switch.
  - the OFF legend of this pushbutton switch comes on.

Subtask 71-00-00-200-051

B. Listen for Unusual Noise

(1) During engine coast-down, listen for any noises that are not normal from the components that are turning.

Subtask 71-00-00-040-052

D. Make the thrust reverser unserviceable

Subtask 71-00-00-010-060

E. Get Access

(1) Open the thrust reverser doors

Subtask 71-00-00-210-051
F. Do a General Visual Inspection

POST SB CFM 73-036

**WARNING:** DO NOT LET THE HMU TEMPERATURE EXCEED 100 DEG.C (212 DEG.F).

(1) Safety precaution:

**NOTE:** Hydromechanical Units (HMUs) that have fluorocarbon (Viton) external seals can leak fuel for a short time when they are below 0 deg.C (32.00 deg.F) (modification 1 and 2)

*(Ref. AMM TASK 71-00-00-790-802)*. If the ambient temperature is below -40 deg.C (-40.00 deg.F) it is recommended to heat the HMU (modification 1 and 2) to minimize leakage during starts per the following procedure:

(a) Heat the HMU housing with a suitable hot air blower (Keco GH100, Aerotech BT400-45 or equivalent) operating at 140 deg.C (284.00 deg.F) until the HMU housing temperature is greater than 25 deg.C (77.00 deg.F).

**NOTE:** The HMU should be warm to the touch but not hot.

END POST SB CFM 73-036

(2) Make a check of the engine, fan frame and turbine for unusual roughness.

(3) Make a check of the fuel nozzle manifold shrouds for leaks. No leaks are permitted.

Fuel on the shrouds is an indication of a leak somewhere in the system.

(4) Do an inspection of the lubrication system lines, fittings and accessories for leaks.

5. Close-up

Subtask 71-00-00-869-055
A. Put the Aircraft back to its Initial Configuration

(1) Stop the pneumatic supply to the aircraft:

- Disconnect the HP ground power unit or shut down the APU.

(2) Do the EIS stop procedure (Ref. AMM TASK 31-60-00-860-802).

Subtask 71-00-00-410-056

B. Close Access

(1) Make sure that the work area is clean and clear of tools and other items.

(2) Close the thrust reverser doors (Ref. AMM TASK 78-36-00-410-801).

Subtask 71-00-00-440-052

C. Make the thrust reverser serviceable (Ref. AMM TASK 78-30-00-440-801).

Subtask 71-00-00-865-059

D. Remove the safety clip(s) and the tag(s) and close this(these) circuit breaker(s):

<table>
<thead>
<tr>
<th>PANEL</th>
<th>DESIGNATION</th>
<th>FIN</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 4000EM1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>722VU</td>
<td>IGN SYS B ENG 1</td>
<td>2EH1</td>
<td>F49</td>
</tr>
<tr>
<td>FOR 4000EM2</td>
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<tr>
<td>721VU</td>
<td>IGN SYS B ENG 2</td>
<td>2EH2</td>
<td>G03</td>
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<td>FOR 4000EM3</td>
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<tr>
<td>722VU</td>
<td>IGN SYS B ENG 3</td>
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<td>F50</td>
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<td>742VU</td>
<td>IGN SYS A ENG 3</td>
<td>1EH3</td>
<td>Q71</td>
</tr>
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</table>
FOR 4000EM4

721VU  IGN SYS B ENG 4    2EH4    G04

Subtask 71-00-00-410-057

E. Close Access

(1) Close the protective door of the AC/DC emergency power center 740VU.

(2) Close the access door 811.

(3) Close the fan cowl doors (Ref. AMM TASK 71-13-00-410-801).

Subtask 71-00-00-862-052

F. De-energize the aircraft electrical circuits

(Ref. AMM TASK 24-41-00-862-801).
B Component maintenance manual

B.1. CFMI Engine General

** ON A/C 051-200

72-00-00 - ENGINE - GENERAL

72-00-00 PB 001 - ENGINE - GENERAL - DESCRIPTION AND OPERATION

1. General

The CFM56-5C series engine is an axial flow, dual spool, high bypass ratio, turbo-fan engine with fan and multistage compression systems driven by reaction turbines. The engine is designed for use with a long duct, forced mixed flow exhaust system. The single stage fan and 4 stage booster is driven by a 5 stage low pressure turbine. A 9 stage, variable geometry, high pressure compressor is driven by an air cooled single stage turbine. A full annular combustor with 20 duplex fuel nozzles distributes the fuel to provide the heat energy to drive the turbines with residual energy providing thrust.

The accessory drive system extracts energy from the high pressure rotor to drive the engine and engine-mounted aircraft accessories. Reverse thrust for braking the aircraft after landing is supplied by an integrated system which acts on the fan discharge airflow which is described in chapter 78.

The principal operational differences between the CFM56-5C series engine models are summarized below:

<table>
<thead>
<tr>
<th>ENGINE MODEL</th>
<th>TAKEOFF THRUST RATING</th>
<th>MAX. EGT deg.C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFM56-5C2</td>
<td>31,200 lbs (13,878 daN)</td>
<td>950</td>
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<tr>
<td>CFM56-5C2/F</td>
<td>31,200 lbs (13,878 daN)</td>
<td>965</td>
</tr>
<tr>
<td>CFM56-5C2/G</td>
<td>31,200 lbs (13,878 daN)</td>
<td>975</td>
</tr>
<tr>
<td>CFM56-5C3/F</td>
<td>32,500 lbs (14,456 daN)</td>
<td>965</td>
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<tr>
<td>CFM56-5C3/G</td>
<td>32,500 lbs (14,456 daN)</td>
<td>975</td>
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<tr>
<td>CFM56-5C4</td>
<td>34,000 lbs (15,123 daN)</td>
<td>975</td>
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</tbody>
</table>
B.2. J6 Electrical Harness

1. Description and Operation.

A. Type.

The J6 electrical harness has:
- 2-wire shielded cables,
- connectors,
- protection elements,
- tapping elements,
- attaching parts,
- identification elements.

These elements are made to go through the environmental conditions of the engine.

B. Function (refer to figure 2).

The J6 electrical harness supplies connections between the interface plug connector (C61) identified J6 and the plug connectors:
- EMU-B, plug connector (C62),
- N2-B, plug connector (C63),
- OIL TEMP. plug connector (C64).

C. Detailed Description (refer to figures 1, 1A and 2).

(1) Components (configuration One, refer to figure 1).

The J6 electrical harness includes:

(a) Four plug connectors (2-80), (3-70), (4-70) and (5-70) with contacts (2-100), (3-90), (4-90), (5-90) and (5-95).

(b) Four heat-shrinkable sleeves (2-10), (3-10), (4-10) and (5-10).

(c) Two heat-shrinkable tapping (2-120) and (4-110).

(d) One cable "A", which has eleven 2-wire shielded cables.

(e) One cable "B", which has one 2-wire shielded cable.
J6 Electrical Harness (Configuration One)
Figure 1 (Sheet 2)
C Poly-phase electric motor

C.1. Electric motor catalogue

Nuestro amplio conocimiento técnico, que tiene en el mundo más de 150 años de experiencia consolidada, dan como resultado un motor preparado para el futuro: diseño universal y ventajas técnicas y económicas evidentes.

Nuestros motores cumplen con las exigentes demandas técnicas del mercado, demostrando una vez más, nuestro liderazgo a nivel mundial.

Aquí presentamos las características que los identifican.

Carcasa
- Diseño unificado en aletas desde el tamaño 71 hasta el tamaño 225.
- Debido a su diseño con aletas posee una mayor conductividad térmica y por lo tanto, una mejor refrigeración.
- Patas integradas, diseñadas para soportar estiércol mecánico exigente.
- Pieza intermedia integrada a la carcasa.
- Placa de características en acero inoxidable.
- Con bornes de conexión para puesta a tierra.

Platillos
- Con un nuevo diseño: más robustos y funcionales, que garantizan un perfecto desempeño ante exigencias mecánicas extremas.

Caja de terminales
- Ubicada en la parte superior.
- Entrada de cables de la acrometide por el lado.
- Con bornera de conexión, lo que facilita su manejo.
- Posibilidad de conexión de puesta a tierra.
- Amplio y cómodo, lo que permite cambios de conexión técnicamente seguros.

Rodamientos
- De tipo rígido de bolas, de doble sello y con juego interno C3.
- Libre de mantenimiento.
- Con una vida útil de hasta 20,000 horas de servicio continuo.

Protección mecánica
- Con resorte tipo CD rig en el platillo A5.
- El diseño de la caperuza aumenta la protección del ventilador contra contac- tos involuntarios.
- Protegido contra chorros de agua en cualquier dirección y contra depósitos de polvo (IP55).

Sistema de aislamiento tropicalizado
- Como en todos los motores Siemens, el sistema de aislamiento es apto para usarse con variadores de velocidad.
- Nuestros materiales aislantes y su comportamiento térmico nos permiten garantizar un f.s. de 1,15 para potencias normalizadas.
- Todos nuestros materiales utilizados en la fabricación de la nueva serie, son Clase F.

Tensiones de funcionamiento
- La línea estándar tiene tensión constante 220/440V, 60HZ.
- Sin embargo, estamos en capacidad de suministrar cualquier tensión requerida, bajo consulta previa.
- Disponible para arranque directo en los tamaños 71, 80, 90 y 112.
- Apto para arranque directo o estrella-tríángulo a partir del tamaño 132.

Disminución del nivel de ruido
- Todos los motores de la nueva generación disminuyen el nivel de ruido.

Mayor rendimiento
- Con este nuevo diseño se ofrece mayor rendimiento, ahorrando energía.

Alta eficiencia
A partir de:

<table>
<thead>
<tr>
<th>HP</th>
<th>RPM</th>
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</thead>
<tbody>
<tr>
<td>35</td>
<td>3,600</td>
</tr>
<tr>
<td>30</td>
<td>1,800</td>
</tr>
<tr>
<td>25</td>
<td>1,200</td>
</tr>
</tbody>
</table>

Ventajas adicionales
- Diseño moderno, versátil y modular.
- Motor robusto.
- Libre de mantenimiento.
- Interconmutable con otras series (1LA2 y 1L43).
- Nuestra fábrica posee el Certifica- do de Aseguramiento de la Calidad ISO9001:2000, según IGNET.
### Motores para cada necesidad

#### Datos técnicos nominales

<table>
<thead>
<tr>
<th>Código</th>
<th>Tipo</th>
<th>Vélocidad 3600 rpm, 2 polos, 60 Hz</th>
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<td></td>
<td></td>
<td>Código</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
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</tr>
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<td></td>
<td></td>
<td>400V</td>
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<td>200Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>220Hz</td>
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</tbody>
</table>

1) Para tension de servicio a 230V, favor consultar.
2) Motores de fabricación bajo pedido.
3) Consultar tiempo de entrega.
<table>
<thead>
<tr>
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<th>Frame BEC</th>
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<th>2.50</th>
<th>3.00</th>
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<td>0.40</td>
<td>0.30</td>
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<td>0.15</td>
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</tbody>
</table>

1) Para tensión de servicio a 220V, favor consultar.
2) Consultar cuerpo de entrega.
### Medidas para montaje (en mm)

<table>
<thead>
<tr>
<th>Motor tamaño</th>
<th>Medidas cromadas (IM B2, IM B3)</th>
<th>medidas de la forma constructiva IM B3</th>
<th>Medidas de la forma constructiva IM B5 / IM B3</th>
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<td>a b h w1 s e f a1 b1 c1 e1 f1 s1 k</td>
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<tr>
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<td>40 19 21.5 6 163</td>
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<td>235 390 140 90 120 12 178 226</td>
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<td>132 M</td>
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<td>299 491 178 216 182 89 12 218 226</td>
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<td>40 45 20 12 320</td>
<td>365.5 620 210 254 184 154 153 300 300</td>
<td>350 250 20 300 5 18 628</td>
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<tr>
<td>160 L</td>
<td>40 45 20 12 320</td>
<td>365.5 620 210 254 184 154 153 300 300</td>
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<td>48 51.5 14 357 499</td>
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<td>200 L</td>
<td>55 59 16 403 514</td>
<td>460 743 305 318 200 133 20 385 396 400 200</td>
<td>350 250 15 300 5 18 743</td>
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<td>225 S</td>
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<td>573 830 286 336 225 149 19 361 430</td>
<td>450 350 16 400 5 17.5 830</td>
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<td>225 M</td>
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<td>250 S</td>
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<td>681 939 349 406 250 168 24 469 500 550 450 18 500 5 17.5 939</td>
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<td>315 S</td>
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<td></td>
</tr>
<tr>
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<td>1280 1400 315 216 28 527 628 660 550 22 600 6 22 1160</td>
<td></td>
</tr>
</tbody>
</table>

1. Medidores de dos poleas
2. Medidores de 4 o 6 poleas
3. *Tamaño constructivo 225 S: M1+116 d1=65, d2=59, a=16 mm, l=460...
4. *Tamaño constructivo 250 S: d1=65, d2=59+16=86 mm...