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	SPF, Aircraft System Engineering Department					
Aircraft	A330 MRTT					

Title:

Hatch functional tests

Summary:

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REVISIONS RECORD

Issue	Revision Reason	Approved
Date	Chapters, Sections, Affected Pages	Signature
A	New Issue	A Corrales
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1 INTRODUCTION

1.1 Object

This document establishes the functional test to carry out on the A330 MRTT RAAF Hatch in order to demonstrate that the A330 MRTT RAAF Hatch operates properly when installed.

Two tests will be carried out: the first one will demonstrate that the hatch works properly.

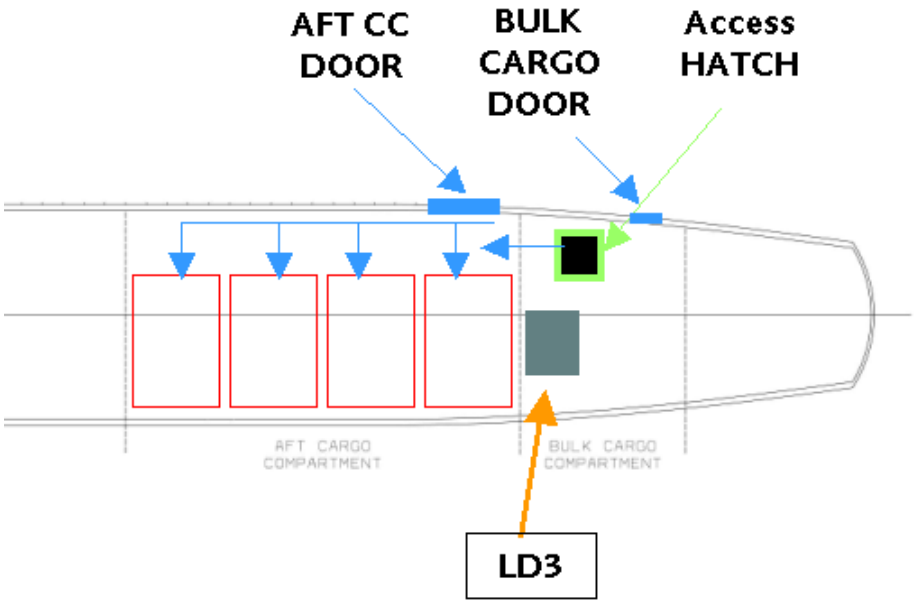

Figure 1. General view of the hatch in the aircraft

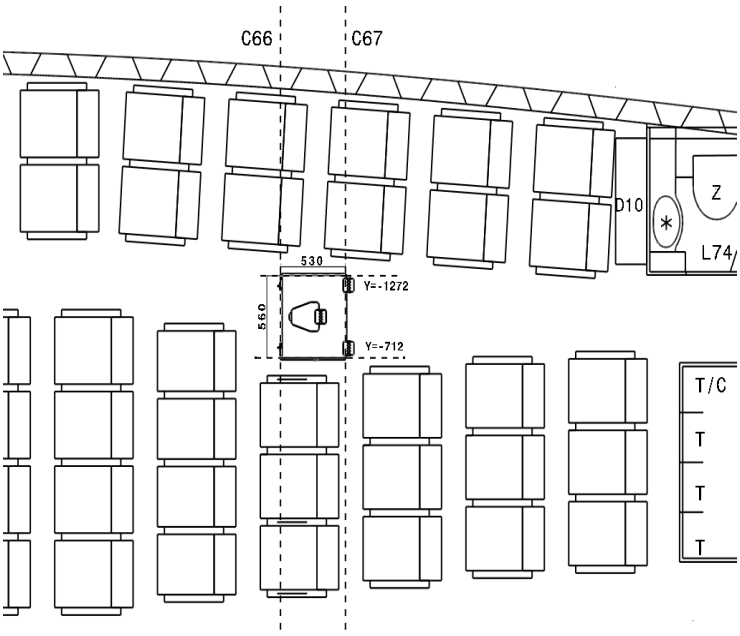

Figure 2. Location of the new access hatch in passenger compartment

The new developed hatch will be located at the rear entrance area, between frames C66 and C67, as shown in Figure 2. In this way, the aft and bulk cargo compartment will be accessible in flight via existing rear door of the bulk cargo compartment and the new hatch and the ladder located in the passenger cabin.

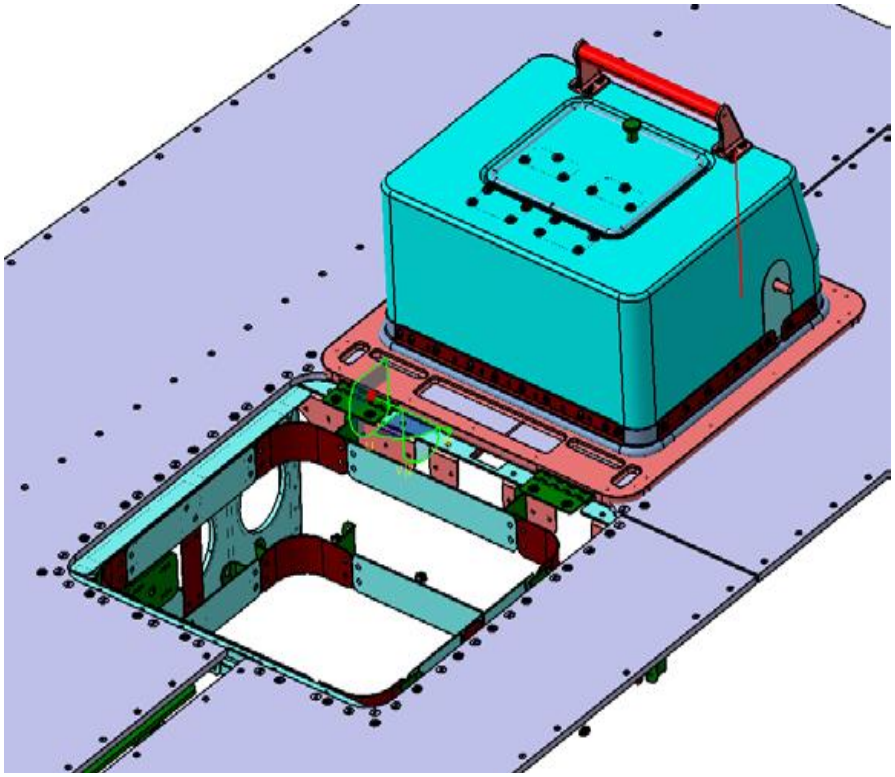

Figure 3. Hatch in open position

1.2 List of acronyms and abbreviations

AMM	Aircraft Maintenance Manual
ASSY	Assembly
INST	Installation
MRTT	Multi-Role Tanker Transport
N/A	Not Applicable
RAAF	Royal Australian Air Force
A/C	Aircraft
AFT CC	After Cargo Compartment
FWD CC	Forward Cargo Compartment
C/B	Circuit Breaker
BCC	Bulk Cargo Compartment

2 APPLICABLE DOCUMENTATION

NT-FA-AEO-06-166	ATA 25 A330 MRTT CIVIL CERTIFICATION – HATCH INSTALLATION GTR
DT-FA-C00-05002	A330-200 MRTT RAAF Certification Program Plan for Civil Configuration
JAR 25 Change 13 effective on October 5, 1989	
DT-FA-AEO-06-165	ATA 25 A330-22 CIVIL CERTIFICATION PROGRAM PLAN
AMM	Aircraft Maintenance Manual
ASM	Aircraft Schematic Manual
AWM	Aircraft Wiring Manual

3 AIRCRAFT CONFIGURATION

The next assemblies must be installed before test execution:

ITEM	DRAWING
HATCH INSTALLATION	F536A7001
	F255A4000
ACCESS DOOR EQUIPED	F536A7010
CARPET MODIFICATION	F255A4004
FLOOR STRUCTURE S17	F537477000
HATCH LADDER	F255A401

Table 1. Hatch configuration

Before performing hatch functional test, following tests must be performed:

- Hatch Subassembly Rigging Procedure (PFAFA-53-67-01-00/0)
- Hatch Rigging Procedure (PFAFA-53-67-02-00/0)

In order to improve visibility, light in and BCC should be on.

In order to reproduce the typical use of the hatch the A/C must have the following configuration:

1. Hatch must be closed and locked
2. Ladder must be installed
3. It is recommended to open the AFT CC Door to provide more light to the test, as described in TASK 52-30-00-010-801

3.1 Test equipment

3.2 Personnel required for the test

One (1) operator.
One (1) observer.

4 DEFINITIONS

N/A.

5 PRELIMINARY INSTRUCTIONS

5.1 Safety Instructions

- All relevant Work Standing Orders concerning safety must be complied with.
- Trained personal must be used to perform the Hatch functional test.
- BCC Door must be closed, as described in TASK 52-30-00-410-803
- Make certain that no personnel or any obstructions are around the hatch. For this purpose seal off Hatch surrounding area, as shown in figure below:

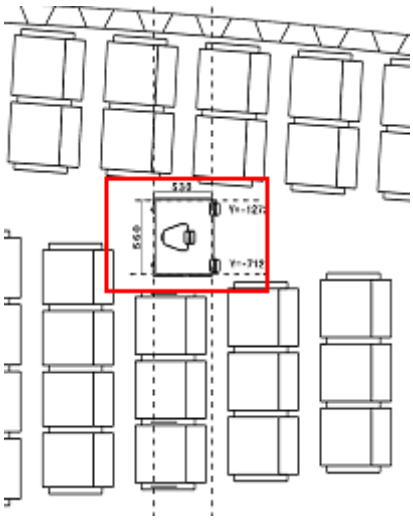

Figure 3. Hatch operation area sealed off

5.2 Preliminary actions

- Check the Hatch structure condition, chafing and cracks.
- All the engines and the APU shall be shut down.

6 TEST EXECUTION

6.1 Test conditions

The following **test conditions** will apply unless otherwise stated:

Ambient conditions:	Temperature: -15°C to 40°C
Aircraft attitude:	Pitch: 0° approximately
	Roll: 0° approximately
	The aircraft must rest in a flat surface over its landing gear

6.2 Hatch functional test

Functional Performance Test

CAUTION: Be careful when performing the test. Hands can be trapped easily if it is not performed with caution.

A. Descend to the BCC

1. Open the cover.

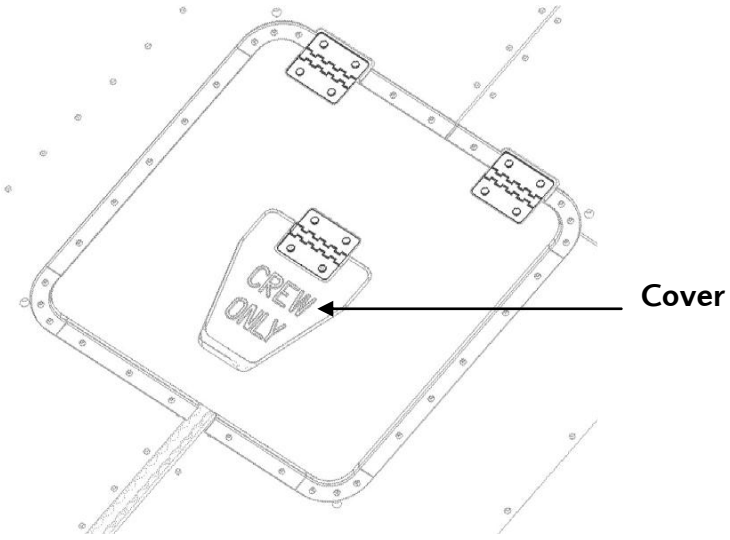

Figure 4. Upper view of the Hatch (from cabin side)

2. Unlock the hatch:

    2.1 Introduce key in the lock
    2.2 Turn 180º leftward
    2.3 Extract the key

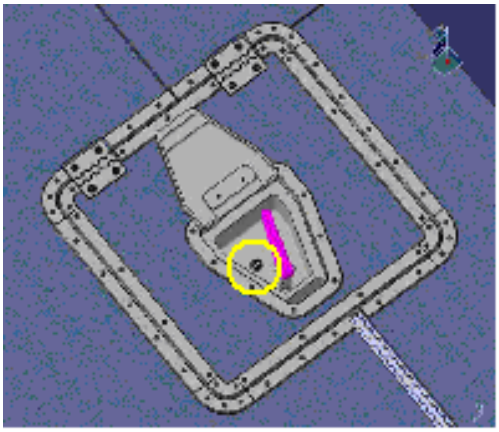

Figure 5. Lock Location

3. Turn handle to open position (from cabin side): turn handle leftward until it cannot be turned more.

4. Pull the hatch keeping the handle in this position up to 90º (approximately).

   CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

5. When the hatch is opened 90º (approximately), grab the hatch by means of the flexible handle.

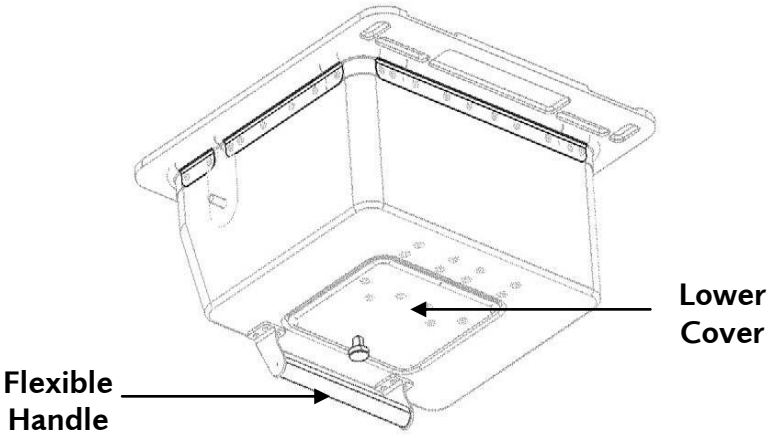

Figure 6. Lower view of the hatch (from BCC)

6. Close the cover (Figure 4), pressing it to achieve a good contact between the two faces of the Velcro.

7. Rest the hatch against the cabin floor (as in Figure 3).

CAUTION: Do not free-fall the hatch to avoid damages on cabin floor.

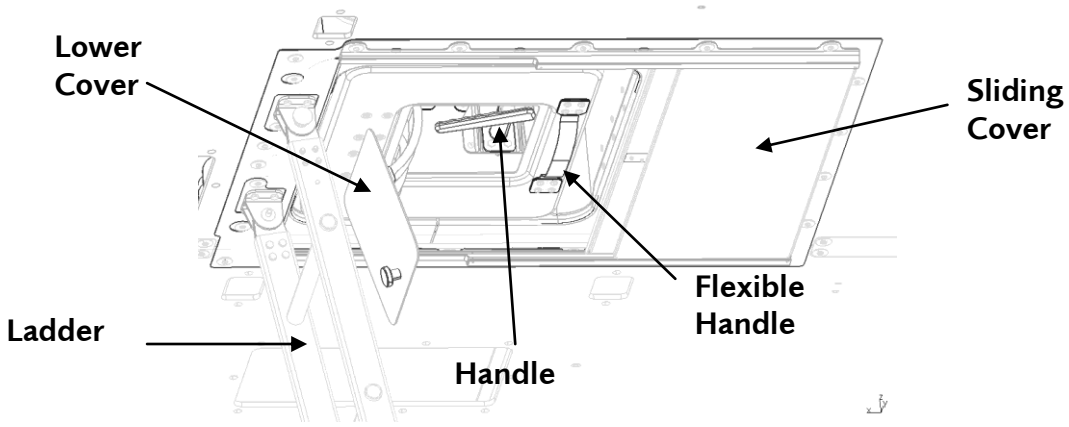

Figure 7. Bottom view of the hatch from de BCC

8. Open the sliding cover: move the cover laterally by means of the flexible handle until it mechanically stops.

9. OBSERVER: descend to the BCC using the ladder.

Now, the HATCH OPERATOR closes the Hatch as follows:

10. Close the sliding cover: move the cover laterally by means of the flexible handle until it closes completely the hole.

11. Pick the hatch up to 90º (approximated) using the flexible handle.

CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

12. Open the cover.

13. Turn handle to open (rightwards) position from cabin side.

14. Close the hatch keeping the handle in this position.

CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

15. Turn the handle to close position (leftward) from the cabin side

CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

16. Lock the hatch:

    16.1 Introduce key in lock.
    16.2 Turn 180º rightward.
    16.3 Extract the key.
    16.4 If the key can not be extracted, turn slightly the handle rightward and leftward until the key goes out.

17. Try to turn handle to open position in order to check that the mechanism is properly locked.

18. Close the cover, pressing it to achieve a good contact between the two faces of the Velcro

19. OBSERVER: check that the sliding cover can not move with the Hatch closed.

The HATCH OPERATOR opens the Hatch as follows and the OBSERVER remains in the BCC.

20. Open the Cover.

21. Unlock the hatch (as in step 2).

22. Turn the handle to open position (rightward) from cabin side.

23. Pull the hatch keeping the handle in this position.

CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

24. When the hatch is opened 90º, grab the hatch by means of the flexible handle.

25. Close the cover, pressing it to achieve a good contact between the two faces of the Velcro.

26. Rest the hatch against the cabin floor.

CAUTION: Do not free-fall the hatch to avoid damages on the cabin floor

27. Open sliding cover (as in step 8).

28. Pick the hatch up to 90º (approximated) using the flexible handle.

CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

29. Open the cover.

30. Turn handle to close position (leftward) from cabin side.

31. Close the hatch keeping the handle in this position.

32. Turn handle to close position (rightward) from the cabin side.

33. Close the cover, pressing it to achieve a good contact between the two faces of the Velcro.

34. OBSERVER: open lower cover

CAUTION: Lower cover has a spring to close itself automatically

35. OBSERVER: turn handle to open position (rightward) from BCC side.

36. OBSERVER: Pull the hatch keeping the handle in this position up to 90º (approximated).

37. Grab the hatch by means of the flexible handle and shall rest the hatch against the cabin floor.

CAUTION: Do not free-fall the hatch to avoid damages on the cabin floor.

38. OBSERVER: exit completely from de BCC.

39. Close the sliding cover (as in step 10).

40. Pick up the hatch up to 90º (approximated) using the flexible handle.

CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

41. Open the cover.

42. Turn the handle to open position (rightward) from cabin side.

43. Close the hatch keeping the handle in this position.

CAUTION: Notice that the hatch has double hinges. It can produce small inadvertent movements of the hatch.

44. Turn handle to close position (leftward) from the cabin side.

CAUTION: This process has to be done carefully to avoid any damage on lining.

45. Lock the hatch.

46. Try to turn handle to open position in order to check that the mechanism is properly locked.

47. Close the cover, pressing it to achieve a good contact between the two faces of the Velcro.

7 TEST RESULTS

The test equipment used has to be logged on the next table.

Equipment	Manufacturer	Model	Tool identification	Calibration date	Next calibration date

Table 2. List of test equipment used

IMPORTANT NOTE: Any comments or remarks arisen during test execution shall be written down here and send to Engineering Department. Non-conformities shall be processed according to CASA-1023.

NOTE: In Case of NCS, write down its number on Table 3.

N.C.S. Number	Date

Table 3

NOTE: After this functional test execution, stamp the correspondent operation on the Production Order.

NOTE: Every result sheet must be stamped and attached to Production Order.

STAMP:	
DATE:	

8 ANNEX

8.1 Test Data Sheet

Fill the following tables with test results:

STEP	STEP RESULT (TICK BOX)				COMMENT (IF FAIL)
1	**Cover can be opened without seizing up**				
	PASS		FAIL		
	Hatch can be unlocked without problem				
	PASS		FAIL		
	Upper-side handle turns smoothly in leftward direction				
	PASS		FAIL		
	Cover can be closed without seizing up				
	PASS		FAIL		
	The cover stays closed after contacting the two Velcro faces				
	PASS		FAIL		
	The hatch can be easily moved by one person				
	PASS		FAIL		
2	**Ladder to descend to the BCC is stable**				
	PASS		FAIL		
3	**Sliding cover can be opened completely**				
	PASS		FAIL		
	Sliding cover can be closed completely				
	PASS		FAIL		
	Sliding cover can be moved without problem				
	PASS		FAIL		
	Upper side handle turns smoothly in rightward direction				
	PASS		FAIL		
	The hatch can be locked				
	PASS		FAIL		
	The hatch can be closed making good contact with the floor				
	PASS		FAIL		
	Sliding cover cannot be moved with the hatch closed				
	PASS		FAIL		
4	**Cover can be opened without seizing up**				
	PASS		FAIL		
	Hatch can be unlocked				
	PASS		FAIL		
	Cover can be closed without seizing up				
	PASS		FAIL		
	The cover stays closed after contacting the two Velcro faces				
	PASS		FAIL		
	The hatch can be easily moved by one person				
	PASS		FAIL		
5	**Sliding cover can be opened completely**				
	PASS		FAIL		

	Sliding cover can be moved without problem				
	PASS		FAIL		
6	**Cover can be opened without seizing up**				
	PASS		FAIL		
	Upper-side handle turns smoothly in leftward direction				
	PASS		FAIL		
	Cover can be closed without seizing up				
	PASS		FAIL		
	The hatch can be easily moved by one person				
	PASS		FAIL		
	The hatch can be closed making good contact with the floor				
	PASS		FAIL		
7	**Lower cover can be opened without seizing up**				
	PASS		FAIL		
	Lower-side handle turns smoothly in rightward direction (from BCC)				
	PASS		FAIL		
	Ladder to descend to the BCC is stable				
	PASS		FAIL		
8	**Sliding cover can be closed completely**				
	PASS		FAIL		
	Sliding cover can be moved without problem				
	PASS		FAIL		
	The hatch can be easily moved by one person				
	PASS		FAIL		
	Cover can be opened without seizing up				
	PASS		FAIL		
	Upper side handle turns smoothly in rightward direction				
	PASS		FAIL		
	The hatch can be closed making good contact with the floor				
	PASS		FAIL		
	The hatch can be locked				
	PASS		FAIL		
	The hatch can not be opened after being locked.				
	PASS		FAIL		
	The cover can be closed without producing jam				
	PASS		FAIL		
	The cover stays closed after contacting the two Velcro faces				
	PASS		FAIL		

OVERALL TEST RESULTS (TICK BOX)		**COMMENTS**
PASS		
FAIL		

Table 4. Test Data Sheet table