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Resumen/Summary <p>This document establishes the tests to prove that the Airstairs functions properly when installed in the A330 MRTT aircraft. It includes a general description of the equipment, short operation procedure, test requirements and test procedures. There is a data sheet at the end of the document to record. Extra information can be found in the reference documents.</p>				
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1. INTRODUCTION

1.1 SCOPE

This document establishes the test requirements pertinent to the compliance with the certification requirements JAR 25.1301 (d) of the Airstairs installation in A330-200 MRTT RAAF aircraft.

1.2 EQUIPMENT DESCRIPTION

1.2.1 General

A set of stairs for the loading and unloading the crew and passengers is installed for use when airbridge or ground support equipment is not available. The Airstairs will be operated at door 1L of the main cabin and stowed in a closet located in the center of the cabin close to the CRC.

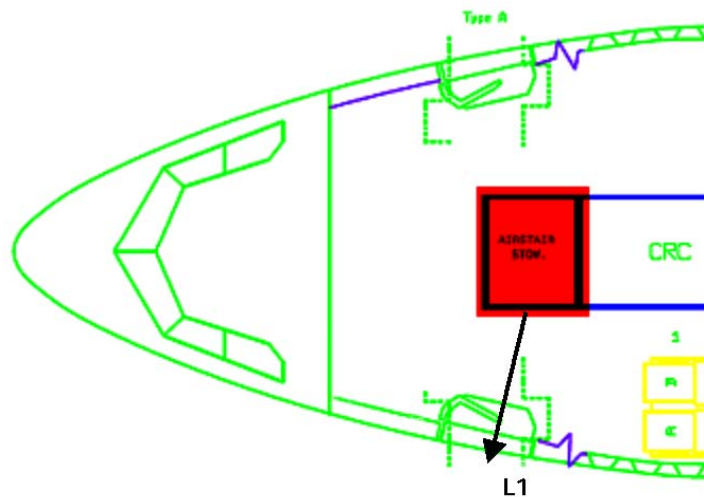


FIGURE 1. General arrangement

1.2.2 Airstairs

The Airstairs is an aluminium construction structure powered by a 28 VDC motor driven hydraulic pump unit, which draws its power from aircraft battery bus.

It is a folding airborne stairs composed by five folded segments, the last one shorter, to cover the L1 door height. There are two detachable manually adjustable support stanchions for added stability.

The folding unit is permanently mounted on a lockable carriage and one person can move it manually from its storage closet to its deployed position, and then it can be either manually (with a included hand pump) or automatically extended.

1.2.3 Control panel

The control box for the Airstairs operation and the step lights (for night safety) is mounted adjacent to the door 1LH. The Airstairs must be locked in the deployed position before receiving power for operation.



FIGURE 2. Control panel.

There are six elements on the control panel:

Signs:

- Power on: It shows when the Airstairs is powered.
- Ready: It shows when the Airstairs is latched in the deploy position.
- Latch: It shows when the Airstairs is fully deployed and ready to use.

Buttons:

- Extend: The Airstairs deploys while it is pressed.
- Retract: The Airstairs retracts while it is pressed.
- Airstairs lights: Once pressed, the step lights turn on.

1.2.4 Hydraulic system

This unit uses MIL-H-5606 Hydraulic fluid.

The hydraulic system is self contained requiring only electrical power from the aircraft battery bus for its operation. The entire hydraulic system is mounted on the top Airstairs segment and is controlled electrically from a remote panel. Hydraulic pressure is supplied by a motor-pump unit mounted on the underside of the upper Airstairs segment.

A hand pump can be used to deploy and retract the stair. The hand pump connects to quick disconnect fittings on the fourth riser from the top of the Airstairs. Access to these disconnect fittings is gained by removing a sheet metal cover.

The reservoir, which is of the non vented type, is mounted below the first step. A pressure relief valve is incorporated in the system to prevent damage to the pump and to regulate the pressure. It is mounted below the third step. The pressure relief valve is set at 1900 psi, plus or minus 25 psi.

1.2.5 Technical data

DIMENSIONS:

Stowed: 32.50 in. wide, 44 in. deep, 71.50 in high.

Deployed: 183.79.0 in. maximum unloaded vertical height at Airstairs pivot point (4.75 in. above lower door sill), 218.0 in. horizontal length, and 282 in. actual length. Pivot point maximum 183.79 in, and minimum 178.27 in. from ground level.

Angle when deployed: 39-42°

WEIGHT:

Airstairs Assembly and Carriages, 738 lbs.

Airstairs Assembly only, 571 lbs.

Carriage-Upper & Lower, 167 lbs.

Airstairs struts, 20 lbs.

OPERATION TIME

Retract/deploy duration: About 1 min

STEPS LIGHTING BRIGHTNESS

6.0 Candles Power (MSCP) per each step.

1.3 TEST OBJECTIVE

The objective of these ground tests is to demonstrate that the Airstairs functions properly, in order to show compliance with certification requirement JAR 25.1301(d) included in the Civil Certification Program Plan.

1.4 APPLICABILITY

These tests apply to A330 MRTT RAAF aircraft.

1.5 REFERENCES

1. DT-FA-C00-05002 A330-200 MRTT RAFF Certification Program Plan for Civil Configuration
2. JAR 25 Change 13 effective on October 5, 1989
3. DT-FA-AE0-06-165 ATA 25 A330-22 CIVIL CERTIFICATION PROGRAM PLAN
4. Airstairs Service Manual, Report No. AC25-A330-13151

1.6 ABBREVIATIONS

CASA	Construcciones Aeronauticas SA
EADS	European Aeronautical Defence and Space Company
JAR	Joint Aviation Regulations
MoC	Means of Compliance
MRTT	Multi-Role Tanker Transport
MSCP	Mean Spherical Candle Power
RAAF	Royal Australian Air Force
TBC	To be confirmed
TBD	To be determined

2. TEST INSTALLATION REQUIREMENTS

2.1 AIRCRAFT CONFIGURATION

The next assemblies must be installed:

ITEM	P/N	AC NUMBER
AIRSTAIRS ASSY	AC25-A330-1125-301	AC25F0000
CABINET- AIRSTAIRS	AC25-A330-1124-101	AC25F0001
ELECTRICAL KIT- AIRSTAIRS	AC25-A330-1122-101	AC25F0005
FLOOR MOD KIT-AIRSTAIRS	AC25-A330-1121-101	AC25F0006
PLACARD-AIRSTAIRS-KIT	AC25-A330-1147-101	AC25F0059

The circuit breaker 715VU must be powered with the aircraft battery or with an external DC power supply capable of delivery 28V DC at a minimum of 50 AMPs and maximum of 80 AMPs.

2.1.1 Test equipment

A chronometer is required to measure the extension and retraction time. The clockwork precision must be at least one second.

2.1.2 Personnel required for the test

One (1) operator.

One (1) observer.

2.2 OPERATING PROCEDURES

A. TO DEPLOY AIRSTAIRS

1. Depress circuit breakers 75A, 15A and 5A located at 715VU circuit breaker panel, in lower compartment.
2. Open Aircraft door to its full open position.
3. Open closet door.

CAUTION: Trained personal must be used to move Airstairs to and from closet and to and from deploy position.

4. Before moving Airstairs to deploy position, check for clearance in the closet.

NOTE: If the Airstairs is slightly open or relaxed, turn toggle switch located on access plate AFT of Airstairs approximately one foot from floor level on #1 segment, then return toggle switch to "OFF" position during extension or retraction modes. Use it only when Airstairs has relaxed. Depress the "Retract" switch to close Airstairs completely. This will eliminate the possibility of the Airstairs jamming in the closet, and also for easy maneuverability.

5. Depress arm to raise locking latch pins from locking block mounted on the floor preventing Airstairs from moving. Use two provided access door on the inboard wall of the closet to reach both fwd and aft latch pins.
6. Move Airstairs out in to door area for deploying position when the lower carriage come into contact with two stops bolted on tracks at the door sill area.
7. Check condition of electrical disconnect to assure that it is properly plugged in. If it not, properly secure it. Remove strap from around Airstairs.
8. Move Airstairs in to deploy position.
9. Engage two (2) latch pins through floor by pushing down with foot. The AFT latch will actuate a micro switch.
10. Ready light will come "ON".

CAUTION: Make certain that no vehicles, personnel or any obstructions are in the way of the Airstairs deployment to extend mode area.

AIRSTAIRS IS NOW READY TO BE DEPLOYED

11. Hold the "EXTEND" switch down until Airstairs has been fully deployed and is resting on ramp.

NOTE: Hydraulic system power Airstairs through approximately 80% of movement. At this point, cutoff switch interrupts power to hydraulic pump and Airstairs extends by gravity.

12. Latch position indicator light illuminates signifying Airstairs is in the "LATCHED" position.

NOTE: The Airstairs may be stopped at any position immediately by releasing the "EXTEND" or "RETRACT" switches. Also if "Ready" light goes out, push down on AFT latching pin & light will come on, proceed on extending or retracting modes.

13. Release the "EXTEND" switch when Airstairs is completely deployed.
14. Install 2 ea. stanchions (struts) underneath the segment #3 at the provided fittings.
15. Turn Airstairs circuit breakers to "OFF" or disconnected position.

B. TO RAISE AIRSTAIRS (Retracting)

CAUTION: Make certain that personnel or any objects are clear of retracting path.

1. Remove two (2) each stanchions (struts) and store in closet.

2. Engage Airstairs circuit breakers to "ON" or engaged position.
3. Hold down the "RETRACT" switch until Airstairs is completely retracted. Ready light "ON". Micro switch between #1 & #2 segments will stop hydraulic pump and motor just at full retract position.
4. Release the "RETRACT" switch when Airstairs is fully retracted. (When micro switch on Airstairs opens).
5. Disconnect circuit breakers to "OFF" or disengaged position.
6. Depress arm to raise latching pins through blocks on the floor. (FWD and AFT of Upper carriage).
7. Install provided strap (if there is one) around Airstairs assembly to prevent Airstairs over relaxing (opening up in closet)
8. Move Airstairs and both carriages to stowed position (inside the Airstairs closet).
9. Push latching pins fwd/aft through blocks on the floor to lock Airstairs and carriages in place. Use two provided access door on the inboard wall of the closet to reach both fwd and aft latch pins.

C. MANUALLY OPERATION WITH HAND PUMP.

1. TO RETRACT:

Take the hose from the pump that is marked "out" on the hand pump. Connect it to the "in" position on the Airstairs. Then take the hose marked "in" or "return" on the pump and attach to "out" position on the Airstairs. The Airstairs is now ready to retract providing the hydraulic fluid level is sufficient. You then pump the hand pump until the Airstairs is fully retracted.

CAUTION: Make sure override key or "T" handle is not in its receptacle at this time of operation.

2. TO DEPLOY:

Take key or "T" handle and insert it into manual override for extend position of Airstairs. You may have to pump the hand pump just enough to get the Airstairs out far enough so gravity will take over. Airstairs will then go down to the full extend position.

CAUTION: If you want to hand pump or use the electric system pump to bring Airstairs back up, remember to remove the key from manual override.

2.3 TEST REQUIREMENTS

The tests must be done with the aircraft in a flat surface and resting over its landing gear.

There shall be enough space to deploy and retract the Airstairs in a safety way. Make certain that no vehicles, personnel or any obstructions are in the way of the Airstairs deployment to the extend mode area.

The Airstairs will not be able to be deployed and retracted in wind conditions over 35 knots.

The ground tests will be carry out inside the hangar with no general ligthing, in order to simulate night conditions.

3. SPECIAL CONDITIONS

It is recommended that the CoA is present to certify the compliance of IDs S176, S3070, S3066, S3069 and S3182 in the Output specification. In any case, the test proves the compliance of these output specifications once passed.

The Airstairs includes stanchions for additional stability. Make sure those stanchions are properly installed to use the Airstairs with the full load.

4. TEST PROCEDURES

Every test step has a relevant data sheet to be filled (See chapter 5. Test data sheets). The operator must do the test, and meanwhile the observer must fill in the data sheet.

1. Before moving the Airstairs, check compliance with equipment specification.
2. Move the Airstairs to the deploy position (Operation procedure steps A.1 to A.10).
3. Extend the Airstairs (Operation procedure steps A.11 to A.15). Measure the extension time.
4. Turn on Airstairs lights by pressing "Airstairs light" button. Turn off lights by pressing again the button.
5. Retract the Airstairs (Operation procedure steps B.1 to B.5). Measure the retraction time.
6. Extend the Airstairs manually (Operation procedure step C.2).

CAUTION: Stanchions are not installed. Load restrictions are applied.

7. Retract the Airstairs manually (Operation procedure step C.1).
8. Move the Airstairs to the stowed position (Operation procedure steps B.6 to B.9)

5. TEST DATA SHEET

Examination date:		Examination time:	
Test site:		A/C model:	
PART 1 – Initial check			
No	To check	Compliance	
1.1	Check the Airstairs structure condition, chafing and cracks.		
1.2	Check the tracks for condition. Tracks must be clean and free of debris or any oil and dirt.		
1.3	Check that stops are properly installed at the end of the tracks.		
1.4	Holes for latches in both sides of door sill L1 must be clean and well defined.		
1.5	Check for the plug on the door frame condition.		
1.6	Check for the control panel condition.		
1.7	Circuit breaker panel 715VU must be powered.		
1.8	Stanchions are placed in the closet.		
	Remarks:		
PART 2 – Moving to the deploy position			
No	To check	Compliance	
2.1	Circuit breakers (3) are engaged		
2.2	Closet door opens properly		
2.3	Check carriage for condition, freedom of operation and security. "U" channels on FWD and AFT of lower carriage must be clean. No oil is allowed on these "U" channels.		
2.4	Check inboard access doors (2) in closet for condition. Test the latch of those access doors.		
2.5	Latch pins (2) for the stowed position can be raised		
2.6	The Airstairs can be moved to the stops by one person		
2.7	Latch pins (2) for the deploy position can be engaged		
2.8	"READY" light on control comes on		
	Remarks:		

PART 3 – Airstairs extension		
No	To check	Compliance
3.1	The Airstairs extends by pressing "EXTEND" button	
3.2	"LATCH" light on control comes on when the Airstairs contacts the ground	
3.3	The Airstairs is fully extended.	
3.4	Stanchions can be adjusted	
3.5	Extension time less than 60 seconds (Record the time on the data sheet)	
3.6	Check hydraulic plumbing for chafing, leaks, condition and routing.	
3.7	Check handrails for proper alignment (Compliance with S3069)	
	Remarks:	
PART 4 – Airstairs light		
No	To check	Compliance
4.1	The Airstairs lights turn on after "AIRSTAIRS LIGHTS" button is pressed.	
4.2	The light in every step is on (Compliance with S3182)	
4.3	Visually check that the step lighting is appropriate to ascend and descend the airstairs securely	
4.4	The Airstairs lights turn off after "AIRSTAIRS LIGHTS" button is pressed again.	
	Remarks:	
PART 5 – Airstairs retraction		
No	To check	Compliance
5.1	The stanchions can be removed	
5.2	The Airstairs retracts by pressing "RETRACT" button	
5.3	"LACHT" light on control comes off when the Airstairs starts to move	
5.4	The Airstairs is fully retracted (Compliance with S3070)	
5.5	"READY" light on control comes on when the Airstairs is fully retracted.	
5.6	Retraction time less than 60 seconds (Record the time on the data sheet)	
	Remarks:	

DATA SHEET 6 – Airstairs manual extension		
No	To check	Compliance
6.1	The hand pump is in the Airstairs	
6.2	The Airstairs is fully extended.	
6.3	Check hydraulic plumbing for chafing, leaks, condition and routing.	
6.4	Check handrails for proper alignment.	
	Remarks:	
DATA SHEET 7 – Airstairs manual retraction		
No	To check	Compliance
7.1	The Airstairs is fully retracted.	
7.2	Check hydraulic plumbing for chafing, leaks, condition and routing.	
	Remarks:	
PART 8 – Moving to the stowed position		
No	To check	Compliance
8.1	Latch pins (2) for the deploy position can be raised	
8.2	The Airstairs can be moved to the closet by one person	
8.3	Latch pins (2) for the stowed position can be engaged	
8.4	Inboard access doors (2) are close and latch.	
8.5	Closet door is close and lock (Compliance with S3066)	
	Remarks:	
	OBSERVER:	
	DATA RECORDED BY:	