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	SPF, Aircraft System Engineering Department					
Aircraft	A330 MRTT					

Title:

Cargo Loading System (CLS) functional tests

Summary:

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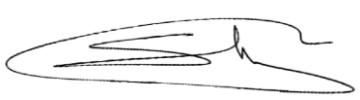
Signature: 	**Signature:** 	**Signature:** 
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REVISIONS RECORD

Issue	**Revision Reason**	**Approved**
Date	**Chapters, Sections, Affected Pages**	**Signature**
A	New Issue	Antonio Corrales
26/06/09	All pages	
B	New Issue	Antonio Corrales
22/07/10	All pages	
C	New Issue	Antonio Corrales
26/09/11	All pages	

1 INTRODUCTION

1.1 Object

This document establishes the functional test to carry out on the A330 MRTT CLS in order to demonstrate that the A330 MRTT CLS has been correctly manufactured and assembled, assuring that military pallets and civil ULD´s can be loaded into the cargo holds without getting jammed and that they can be secured correctly. It will be also checked that the PDU associated to a XZ latch is isolated when the latch is lift.

The main CLS modification are shown in the pictures below:

1. New YZ-Locks (lateral-vertical) restrictions due to the different size of military pallets.
2. Stops at the end of the compartment modified for a better pallet attaching.
3. Continuous side guides.
4. Additional locks in roller tracks at Y-140.
5. XZ-latches (longitudinal-vertical) of Y+1470 and Y-805 moved to Y+1308 and Y-643 due to the discontinuous attachment points in military pallets.
6. A new short Y-Guide version in the Aft Cargo Compartment due to the new roller track.

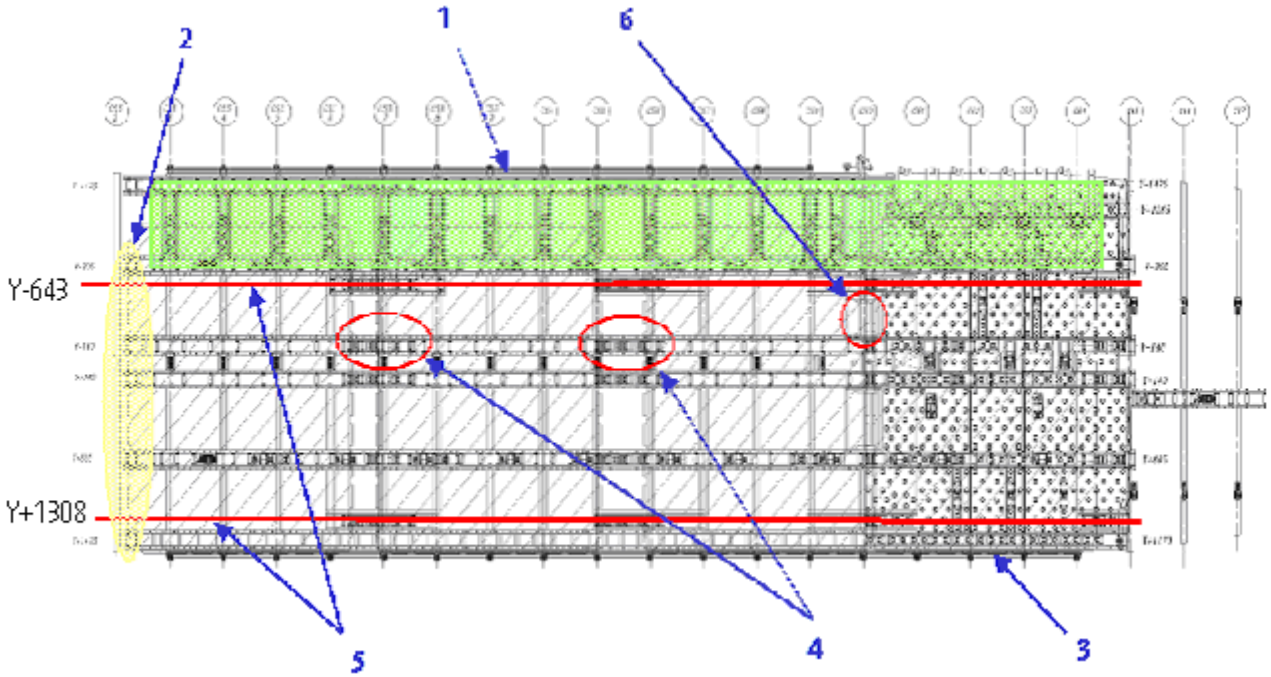

Figure 1. Modifications in CLS for military pallets (Forward Cargo Compartment)

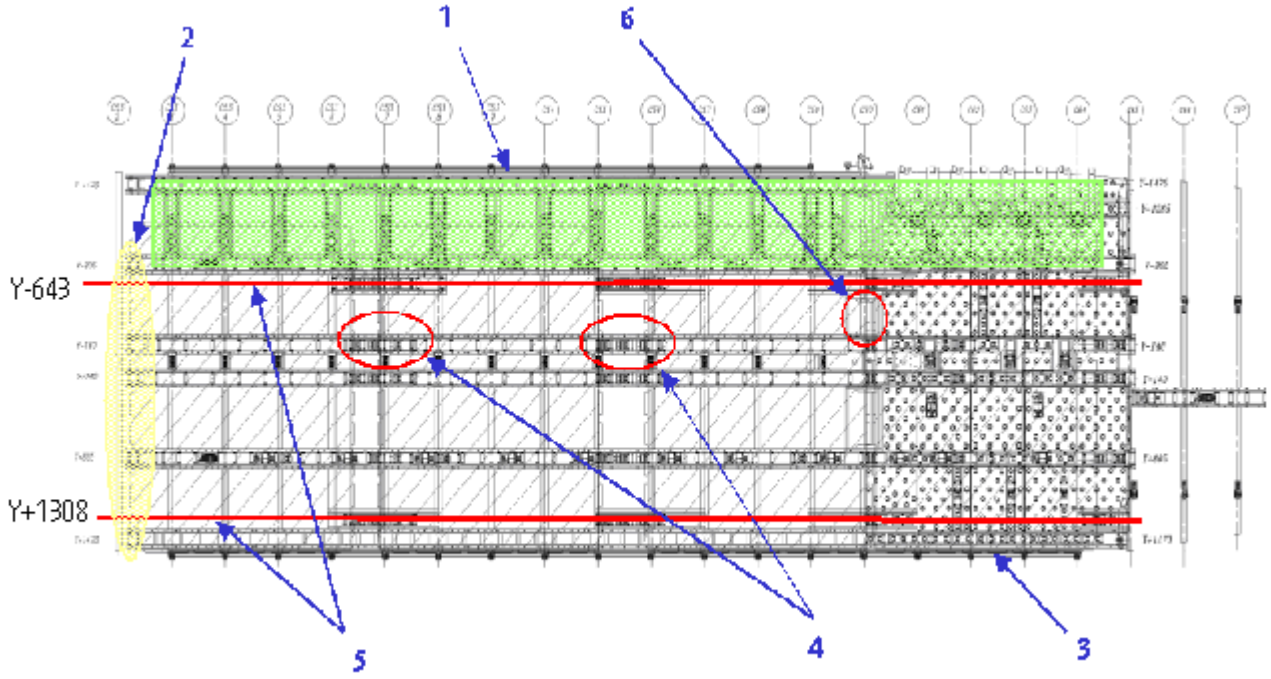

Figure 2. Modification in CLS for military pallets (Aft Forward Cargo Compartment)

1.2 List of acronyms and abbreviations

AMM	Aircraft Maintenance Manual
ASSY	Assembly
INST	Installation
MRTT	Multi-Role Tanker Transport
FSTA	Future Strategy Tanker Aircraft
CLS	Cargo Loading System
A/C	Aircraft
Fwd CC	Forward Cargo Compartment
Aft CC	Afterwards Cargo Compartment
CG	Centre of Gravity
ARO	Anti Roll Out
ULD	Unit Load Device
PDU	Power Drive Unit

2 APPLICABLE DOCUMENTATION

NT-FA-AEO-06-167	ATA 25 A330 MRTT Civil Certification Cargo Loading System (CLS) Ground Test Requirements (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
ASM	Aircraft Schematic Manual
AWM	Aircraft Wiring Manual
F255A0000	CLS Modification
F532A0010	Fwd Cargo Compartment Structural Modification
F534A0010	Aft Cargo Compartment Structural Modification
F255A2001	Military Pallets Installation – Fwd compartment
F255A3001	Military Pallets Installation – Aft compartment
F113A5001	Placards CLS – Fwd Cargo Compartment
F113A5002	Placards CLS – Aft Cargo Compartment

3 AIRCRAFT CONFIGURATION

Following actions are performed before starting CLS test:

- The bonding and electrical test have been satisfactorily performed.
- The next assemblies must be installed before test execution:

Item	Drawing
CLS MODIFICATION	F255A0000
FWD CARGO COMPARTMENT STRUCTURAL MODIFICATION	F532A0010
AFT CARGO COMPARTMENT STRUCTURAL MODIFICATION	F534A0010
MILITARY PALLETS INSTALATION – FWD CC	F255A2001
MILITARY PALLETS INSTALATION – AFT CC	F255A3001
PLACARDS CLS – FDW CARGO COMPARTMENT	F113A5001
PLACARDS CLS – AFT CARGO COMPARTMENT	F113A5002

Table 1. CLS test A/C configuration

The A/C must have the following configuration:

- It must rest on its landing gear.
- Ground service network must be energized (115/200V AC 400Hz), according with TASK 24-41-00-861-801 of AMM: Energize the Aircraft Electrical Circuits from the External Power A.
- Cargo doors must be closed, according with TASK 52-30-00-010-801.
- Bulk cargo compartment door shall be closed during entire test, according with TASK 52-30 –00-410-803.

3.1 Test equipment

The following equipment is necessary to perform the tests:

- Fork-Lift
- Pallet Loader (optional)
- Dummy pallet kit (P/N PREN-2551-10000-01-A)

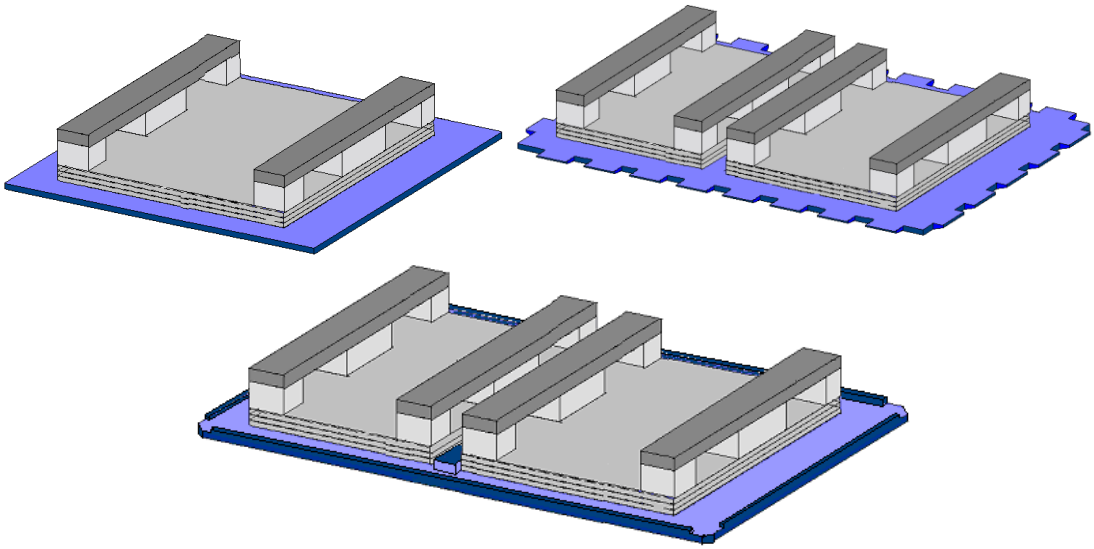

Figure 3: Dummy pallet kit

3.2 Personnel required for the test

Four (4) people are necessary for this test:

- One person to operate de CLS, responsible for:
  - Opening/closing the cargo doors.
  - Operate the control panel.
  - Latching/unlatching the pallets/containers.
- One person as observer responsible for noting normal and abnormal functioning during the tests.
- One person to operate the forklift.

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 CLS test. Cargo handling personnel must stay clear of moving pallets. Injury can result from impact with pallets, or from being caught between pallets or pallets and compartment wall. Ensure that ball mat area is clear of personnel prior to cargo compartment.

- Make certain that no vehicles, personnel or any obstructions are in the way of pallet transporter and pallet container loader. For this purpose seal off fwd/aft cargo compartments area.

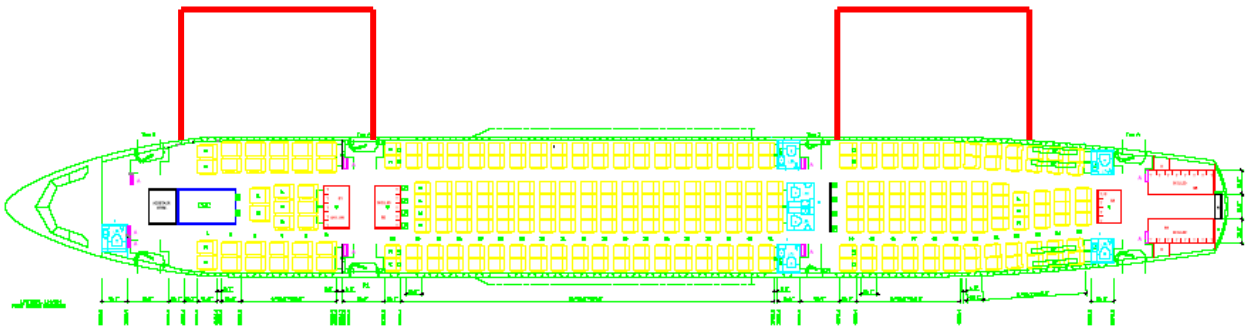

Figure 4. Area to be sealed off when performing the test

5.2 Preliminary instructions

- Check the CLS structure condition, chafing and cracks.

- Check latches and guides for condition; they must be clean and free of debris or any oil and dirt.

- Check that stops are properly installed.

- Check for the control panel condition.

- All the engines and the APU shall be shut down.

- Yellow hydraulic must be serviced:

  - The reservoir of the yellow hydraulic must be pressurized (TASK 29-14-00-614-804)
  - Make sure that the level of the hydraulic reservoir is correct (TASK 12-12-29-611-805).
  - Make sure that Cargo Door Control C/B´s are closed (TASK 52-30-00-865-056).

- In the overhead panel press the buttons associated to yellow hydraulic, as shown in figure below:

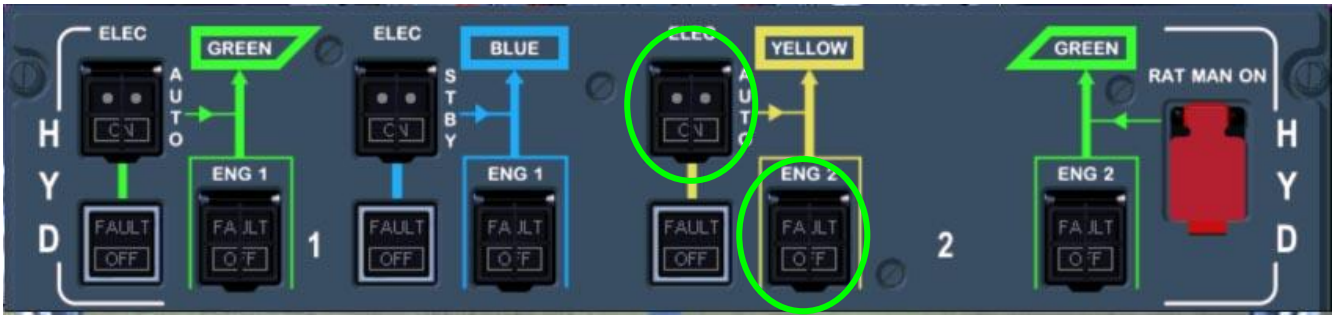

Figure 5. Buttons to be pressed in overhead panel

- Operational test of the Proximity switches, doorsill latches and power drive units:

Operational test of the proximity switches and power drive units in FWD CC:

1. Energize ground service network.
2. Open FWD CC door (TASK 52-30-00-010-801).
3. Install safety lock on the actuator of the FWD CC door (TASK 52-30-00-480-801).
4. Put a warning notice on the control panel 5020VE of the cargo loading system to tell persons not to use it.
5. Make sure that following C/B are closed:

PANEL	DESIGNATION	FIN	LOCATION
5002VE	FWD CARGO LOADING CTL	1MY	C13
5002VE	FWD CARGO LOADING POWER LH2	2MY	B10
5002VE	FWD CARGO LOADING POWER L	3MY	A10
5002VE	FWD CARGO LOADING POWER RH2	4MY	B13
5002VE	FWD CARGO LOADING POWER RH1	5MY	A13

6. Lower all the latch elements of the latches that have a proximity switch below them.
7. Lower the YZ latch on the doorsill area.
8. On the control panel 5020VE set the POWER ON/OFF switch 8MY to ON.
9. Cover each ULD scanning device located in the ballmat area.
10. Push the joystick 9MY to the FWD position and hold it there.
11. Check that the roller of each power drive unit comes up and turns in FWD direction.
12. Release the joystick 9MY so that it moves to the neutral position.
13. Check that the roller of each longitudinal power drive unit moves down and stops.
14. Push the joystick to the AFT position and hold it there.
15. Check that the roller of each longitudinal power drive unit comes up and turns in AFT direction.
16. Release the joystick 9MY so that it moves to the neutral position.
17. Check that the roller of each longitudinal power drive unit moves down and stops.
18. On the control panel 5020VE push the joystick 9MY to the FWD position and hold it there.
19. On the FWD cargo compartment floor lift the latch element of each latch with a proximity switch.
20. NOTE: perform this step from AFT to FWD direction.
21. Check that each longitudinal PDU related to the proximity switch moves down and stops.
22. Lower the latch element with proximity switch.
23. Check that the roller of each longitudinal PDU related to the proximity switch comes up and turns in FWD direction.
24. On the control panel 5020VE release the joystick 9MY so that it moves to its neutral position.
25. Check that the roller of each longitudinal power drive unit moves down and stop.
26. Push the joystick 9MY to the IN position and hold it there.
27. Check that the roller of each transversal power drive unit moves up and turns in load direction.
28. Release the joystick 9MY to the neutral position.
29. Check that the roller of each transversal power drive unit moves down and stops.

30. Push the joystick 9MY to the OUT position and hold it there.

31. Check that the roller of each transversal power drive unit moves up and turns in unload direction.

32. Remove the cover from the ULD scanning device on the longitudinal power drive units.

33. Push the joystick 9MY to the FWD position and hold it there.

34. Check that longitudinal power drive units in the ball mat area do not operate and that the roller of each longitudinal power drive unit in the cargo compartment floor comes up and turns in FWD direction.

35. Release the joystick 9MY so that it moves to the neutral position.

36. Check that the roller of each longitudinal power drive unit on the cargo compartment floor moves down and stops.

37. Push the joystick 9MY to the AFT and hold it there.

38. Check that longitudinal power drive units in the ball mat area do not operate and the roller of each longitudinal power drive unit on the cargo compartment floor comes up and turns in AFT direction.

39. Release the joystick 9MY so that it moves to the neutral position.

40. Check that the roller of each longitudinal power drive unit on the cargo compartment floor moves down and stops.

41. Remove the cover from each ULD scanning device of the transversal power drive unit in the ball mat area.

42. Push the joystick 9MY to the IN position and hold it there.

43. Check that transversal power drive units do not operate.

44. Release the joystick 9MY to its neutral position.

45. Push the joystick 9MY to the OUT position and hold it there.

46. Check that transversal power drive units do not operate.

47. On the control panel 5020VE set the POWER ON/OFF switch 8MY switch to OFF.

Operational test of the proximity switches and power drive units in AFT CC:

48. Energize ground service network.

49. Open AFT CC door (TASK 52-30-00-010-801).

50. Install safety lock on the actuator of the AFT CC door (TASK 52-30-00-480-801).

51. Put a warning notice on the control panel 5056VE of the cargo loading system to tell persons not to use it.

52. Make sure that following C/B are closed:

PANEL	DESIGNATION	FIN	LOCATION
5006VE	AFT CARGO LOADING CTL	101MY	C13
5006VE	AFT CLS/LH2-POWER	102MY	B10
5006VE	AFT CLS/LH1-POWER	103MY	A10
5006VE	AFT CLS / RH2-PWR	104MY	B13
5006VE	AFT CLS / RH1-PWR	105MY	A13

53. Lower all the latch elements of the latches that have a proximity switch below them.

54. Lower the YZ latch on the doorsill area.

55. On the control panel 5056VE set the POWER ON/OFF switch 8MY to ON.

56. Cover each ULD scanning device located in the ballmat area.

57. Push the joystick 109MY to the AFT position and hold it there.

58. Check that the roller of each power drive unit comes up and turns in AFT direction.

59. Release the joystick 109MY so that it moves to the neutral position.

60. Check that the roller of each longitudinal power drive unit moves down and stops.

61. Push the joystick to the FWD position and hold it there.

62. Check that the roller of each longitudinal power drive unit comes up and turns in FWD direction.

63. Release the joystick 109MY so that it moves to the neutral position.

64. Check that the roller of each longitudinal power drive unit moves down and stops.

65. On the control panel 5056VE push the joystick 9MY to the FWD position and hold it there.

66. On the AFT cargo compartment floor lift the latch element of each latch with a proximity switch.

67. NOTE: perform this step from FWD to AFT direction.

68. Check that each longitudinal PDU related to the proximity switch moves down and stops.

69. Lower the latch element with proximity switch.

70. Check that the roller of each longitudinal PDU related to the proximity switch comes up and turns in FWD direction.

71. On the control panel 5056VE release the joystick 109MY so that it moves to its neutral position.

72. Check that the roller of each longitudinal power drive unit moves down and stop.

73. Push the joystick 109MY to the IN position and hold it there.

74. Check that the roller of each transversal power drive unit moves up and turns in load direction.

75. Release the joystick 109MY to the neutral position.

76. Check that the roller of each transversal power drive unit moves down and stops.

77. Push the joystick 109MY to the OUT position and hold it there.

78. Check that the roller of each transversal power drive unit moves up and turns in unload direction.

79. Remove the cover from the ULD scanning device on the longitudinal power drive units.

80. Push the joystick 109MY to the FWD position and hold it there.

81. Check that longitudinal power drive units in the ball mat area do not operate and that the roller of each longitudinal power drive unit in the cargo compartment floor comes up and turns in FWD direction.

82. Release the joystick 109MY so that it moves to the neutral position.

83. Check that the roller of each longitudinal power drive unit on the cargo compartment floor moves down and stops.

84. Push the joystick 109MY to the AFT and hold it there.

85. Check that longitudinal power drive units in the ball mat area do not operate and the roller of each longitudinal power drive unit on the cargo compartment floor comes up and turns in AFT direction.

86. Release the joystick 109MY so that it moves to the neutral position.

87. Check that the roller of each longitudinal power drive unit on the cargo compartment floor moves down and stops.

88. Remove the cover from each ULD scanning device of the transversal power drive unit in the ball mat area.

89. Push the joystick 109MY to the IN position and hold it there.

90. Check that transversal power drive units do not operate.

91. Release the joystick 109MY to its neutral position.

92. Push the joystick 109MY to the OUT position and hold it there.

93. Check that transversal power drive units do not operate.

94. On the control panel 5056VE set the POWER ON/OFF switch 8MY switch to OFF.

Operational test of the Door Sill latches in FWC CC

1. In the doorsill area push the Y-latch in the direction of the latch housing and hold it.

2. Check that the balance assy lowers when the distance between the top of the roller and the top of the housing is less than 15 mm. The Y-latch moves to the locked position (90 deg to the balance assy)

3. On the each doorsill latch push the lever of the manually operated YZ-latch down.

4. On the control panel 5020VE set the POWER ON/FF switch 8MY to ON.

5. Push the joystick 9MY to the IN position and hold it there.

6. Check that the roller of the transversal PDU 14MY2 in the ball mat area comes up and turns in the load direction.

7. On the doorsill latch 5054VE push the manually operated YZ-latch up.

8. Check that the roller of the transversal PDU 14MY2 in the ball mat area moves down and stops.

9. Push the lever of the manually operated YZ-latch down.

10. Check that the roller of the transversal PDU 14MY2 in the ball mat area comes up and turns in the load direction.

11. Repeat steps 6 to 10 for subsequent doorsill latches: 5050VE1, 5050VE2 and 5050VE3.

12. On the control panel 5020VE release the joystick 9MY so that it moves to the neutral position.

13. Check that the roller of the transversal PDU 14MY2 moves down and stops.

14. Set the POWER ON/OFF switch 8MY to OFF.

15. Remove the cover from the ULD scanning device on the PDU (FR21-FR25).

16. On the control panel 5020VE pull the SILL LOCK handle in the UNLOCKED position and hold it there.

17. Check that the overridable Y-latches of the doorsill latches lower fully.

18. On the control panel 5020VE release the SILL LOCK handle so that it moves to LOCKED position.

19. Check that overridable Y-latches of the doorsill latches must be fully lifted in approximately 8 sec.

20. On the door operation panel move the door operation lever to OPEN position and hold it.

21. Check that the YELLOW electric pump 1JJ does not operate.

22. On the door operation panel release the door operation lever so that it moves to the neutral position.

23. On the doorsill area, push the manually operated YZ-latch up.

24. On the door operation panel move the door operation lever to CLOSE position.

25. Check that cargo compartment door starts to close.

26. Release the door operation lever so that it moves to the neutral position.

27. Move the door operation lever to OPEN and hold it until the green indicator light 58MJ comes on.

28. Check that the cargo compartment door moves to the fully open position.

29. Release the door operation lever so that it moves to the neutral position.

Operational test of the Door Sill latches in AFT CC

30. In the doorsill area push the Y-latch in the direction of the latch housing and hold it.

31. Check that the balance assy lowers when the distance between the top of the roller and the top of the housing is less than 15 mm. The Y-latch moves to the locked position (90 deg to the balance assy)

32. On the each doorsill latch push the lever of the manually operated YZ-latch down.

33. On the control panel 5056VE set the POWER ON/FF switch 8MY to ON.

34. Push the joystick 109MY to the IN position and hold it there.

35. Check that the roller of the transversal PDU 14MY2 in the ball mat area comes up and turns in the load direction.

36. On the doorsill latch 5054VE push the manually operated YZ-latch up.

37. Check that the roller of the transversal PDU 14MY2 in the ball mat area moves down and stops.

38. Push the lever of the manually operated YZ-latch down.

39. Check that the roller of the transversal PDU 14MY2 in the ball mat area comes up and turns in the load direction.

40. Repeat steps 6 to 10 for subsequent doorsill latches: 5050VE1, 5050VE2 and 5050VE3.

41. On the control panel 5056VE release the joystick 9MY so that it moves to the neutral position.

42. Check that the roller of the transversal PDU 14MY2 moves down and stops.

43. Set the POWER ON/OFF switch 8MY to OFF.

44. Remove the cover from the ULD scanning device on the PDU (FR21-FR25).

45. On the control panel 5056VE pull the SILL LOCK handle in the UNLOCKED position and hold it there.

46. Check that the overridable Y-latches of the doorsill latches lower fully.

47. On the control panel 5056VE release the SILL LOCK handle so that it moves to LOCKED position.

48. Check that overridable Y-latches of the doorsill latches must be fully lifted in approximately 8 sec.

49. On the door operation panel move the door operation lever to OPEN position and hold it.

50. Check that the YELLOW electric pump 1JJ does not operate.

51. On the door operation panel release the door operation lever so that it moves to the neutral position.

52. On the doorsill area, push the manually operated YZ-latch up.

53. On the door operation panel move the door operation lever to CLOSE position.

54. Check that cargo compartment door starts to close.

55. Release the door operation lever so that it moves to the neutral position.

56. Move the door operation lever to OPEN and hold it until the green indicator light 58MJ comes on.

57. Check that the cargo compartment door moves to the fully open position.

58. Release the door operation lever so that it moves to the neutral position.

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 Cargo Loading System Test

NOTE. A single type pallet/ULD will be used in each test configuration. Therefore, the pallet shall be moved to every position in order to perform the test and to prove that the system works correctly.

6.2.1 FWD CLS

1. Open FWD CC Door (8.1.1 Door Operation).
2. Install the safety lock on the actuator of the FWD CC Door (TASK 52-30-00-480-801).
3. Set the light switch 6LU on the service panel 5022VE to ON.
4. Put a warning notice on the control panel 5020VE of the CLS to tell people not to use it.
5. Put the access platform in position below the C/B panel 5002VE.
6. Open the access panel 132UC of the CB panel.
7. Make sure that following C/B are closed: A13, A10, B13, B10 and C13.
8. Lower doorsill latches 5050VE and 5054VE.
9. Complete following configurations:

A1. Military Pallet
(PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2):

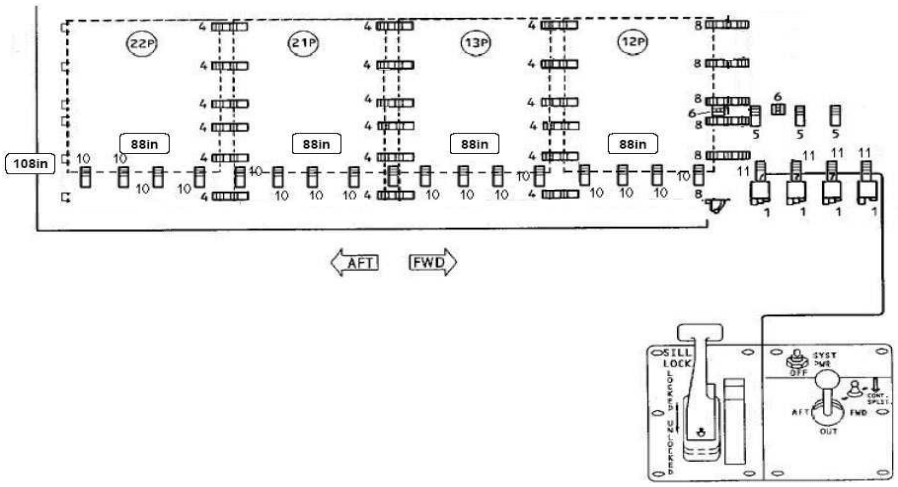

Figure 6. Military Pallet test configuration FWD CC

1. Load the military dummy pallet (PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2) and move it to 22P position in FWD CC (1.1 Pallet loading procedure to the first position attached to Functional Test Description File).

2. Move the military dummy pallet (PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2) to positions 21P, 13P and 12P in FWD CC (2.1. Pallet moving procedure attached to Functional Test Description File).

3. Unload the military dummy pallet (PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2) from position 12P in FWD CC. (3. Pallet/container unloading procedure attached to Functional Test Description File).

LD7 CONTAINER
(PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2):

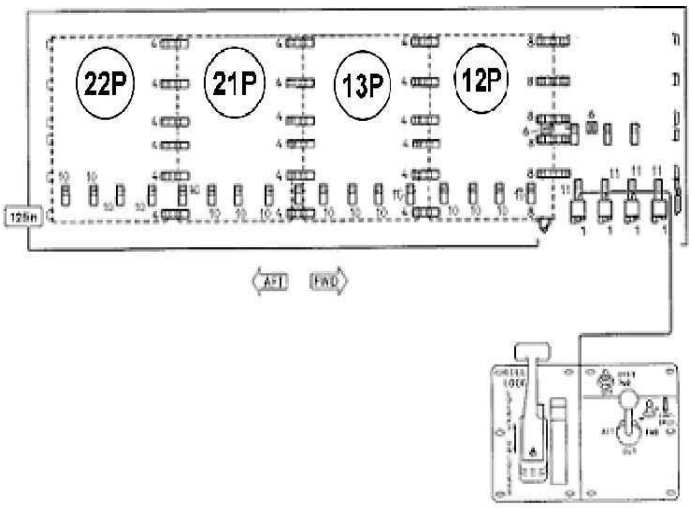

Figure 7: LD7 dummy test configuration FWD CC

1. Load the LD7 container (PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2) and move it to 22P position in FWD CC (1.1 Pallet loading procedure to the first position attached to Functional Test Description File).

2. Move the LD7 container (PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2) to positions 21P, 13P and 12P in FWD CC. (2.1. Pallet moving procedure attached to Functional Test Description File).

3. Unload the LD7 container (PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2) from position 12P in FWD CC (3. Pallet/container unloading procedure attached to Functional Test Description File).

LD3 CONTAINERS
(PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2):

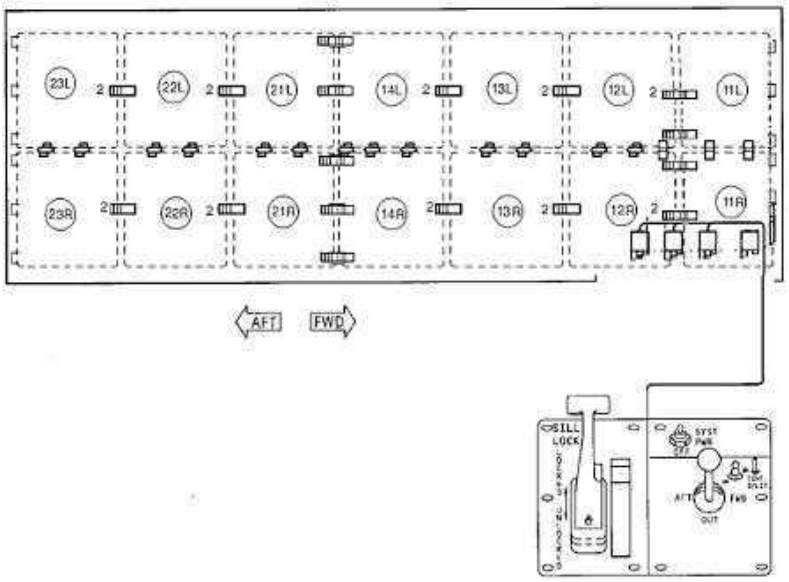

Figure 9. LD3 test configuration FWD CC

1. Load both LD3 containers (PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2) and move them to 23L and 23R position at the simuntaneously in FWD CC (1.1 Pallet loading procedure to the first position attached to Functional Test Description File

2. Move both LD3 containers (PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2)to positions 22R/22L, 21R/21L, 14R/14L, 13R/13L, 12R/12L, 11R/11L position simuntaneously in FWD CC (2.1. Pallet moving procedure attached to Functional Test Description File).

3. Unload both LD3 containers (PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2) from position 11L and 11R in FWD CC (3. Pallet/container unloading procedure attached to Functional Test Description File).

10. Lift doorsill latches. The CLS gets electrically isolated (move the joystick in any direction to prove it).
11. Set the POWER switch to OFF.
12. Remove safety-lock from the FWD CC Door (TASK 52-30-00-410-801).
13. Close FWD CC Door (8.1.1 Door operation)

6.2.2 AFT CLS

1. Open AFT CC Door (8.1.1 Door operation).
2. Install the safety lock on the actuator of the AFT CC Door (TASK 52-30-00-480-801).
3. Set the light switch 6LU on the service panel 5022VE to ON.
4. Put a warning notice on the control panel 5020VE of the CLS to tell people not to use it.
5. Put the access platform in position below the C/B panel 5002VE.
6. Open the access panel 132UC of the CB panel.
7. Make sure that following C/B are closed: A13, A10, B13, B10 and C13.
8. Lower doorsill latches 5050VE and 5054VE.
9. Complete following configurations:

A2. Military Pallet
(PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2):

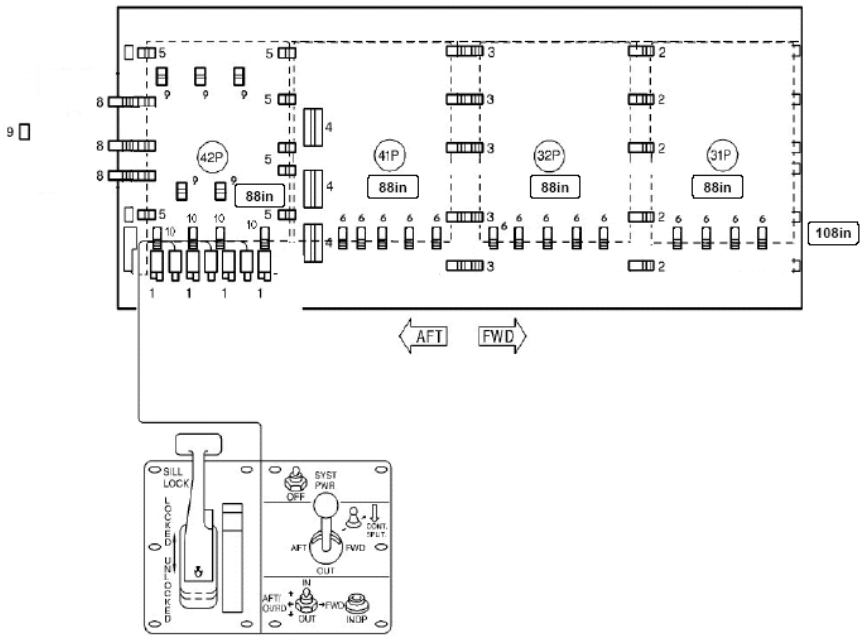

Figure 10. Military pallets test configuration AFT CC

1. Load the military dummy pallet (PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2) and move it to 31P position in AFT CC (1.2 Pallet loading procedure to the first position attached to Functional Test Description File).

2. Move the military dummy pallet (PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2) to positions 32P, 41P and 42P in AFT CC (2.2. Pallet moving procedure attached to Functional Test Description File).

3. Unload the military dummy pallet (PN PREN-2551-10003-XX-A, PART1; PN PREN-2551-10004-XX-A, PART2) from position 42P in AFT CC (3. Pallet/container unloading procedure attached to Functional Test Description File).

B2. LD7 CONTAINER
(PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2):

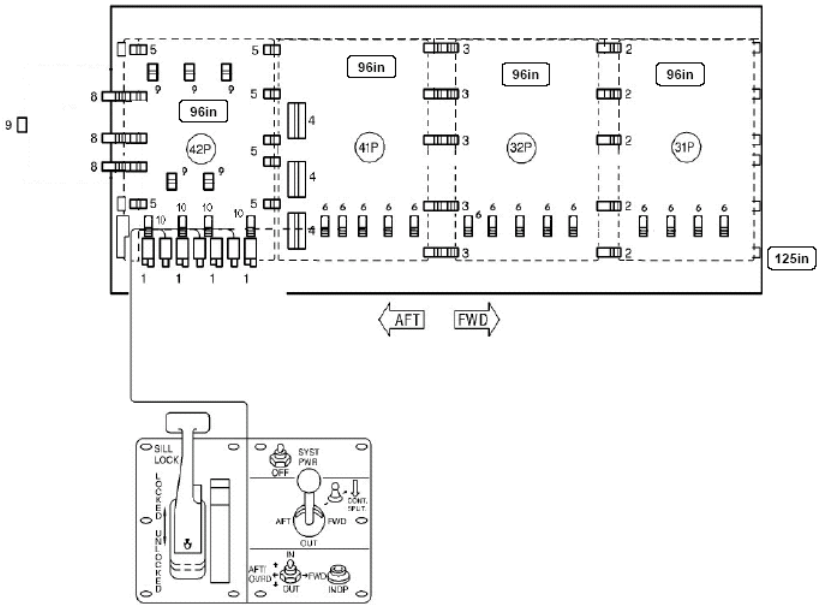

Figure 11. 96"x125" dummy pallet test configuration AFT CC.

1. Load the LD7 container (PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2) and move it to 31P position in AFT CC (1.2 Pallet loading procedure to the first position attached to Functional Test Description File).

2. Move the LD7 container(PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2) to positions 32P, 41P and 42P in AFT CC (2.2. Pallet moving procedure attached to Functional Test Description File).

3. Unload the LD7 container(PN: PREN-2551-10005-XX-A, PART1; PN PREN-2551-10006-XX-A, PART2) from position 42P in AFT CC (3. Pallet/container unloading procedure attached to Functional Test Description File).

C1. LD3 CONTAINERS (PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2):

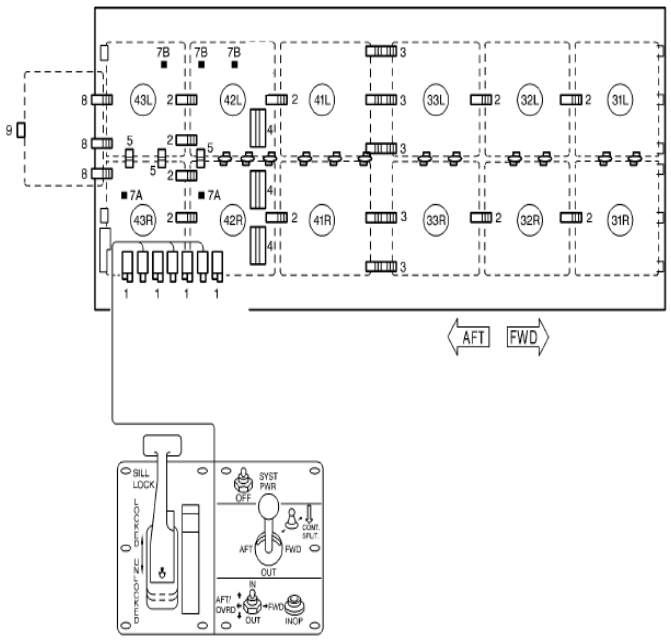

Figure 13: LD3 dummy pallet test configuration AFT CC

1. Load both LD3 containers (PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2) and move them to position at the simuntaneously in AFT CC (1.2 Pallet loading procedure to the first position attached to Functional Test Description File

2. Move both LD3 containers (PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2)to positions 31R/31L, 32R/32L, 33R/33L, 41R/41L, 42R/42L, 43R/43L simuntaneously in AFT CC (2.2. Pallet moving procedure attached to Functional Test Description File).

3. Unload both LD3 containers (PN: PREN-2551-10001-XX-A, PART1; PN PREN-2551-10002-XX-A, PART2) from position 31L and 31R in AFT CC (3. Pallet/container unloading procedure attached to Functional Test Description File).

10. Lift doorsill latches.
11. Set the POWER switch to OFF.
12. Remove safety-lock from the FWD CC Door (TASK 52-30-00-410-801).
13. Close FWD CC Door (8.1.1 door operation)

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 3. 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 MP-22501

NOTE: In Case of NCS, write down its number on Table 4

N.C.S. Number	Date

Table 4

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 Operation procedures

8.1.1 Door operation

8.1.1.1 Open the FWD and/or AFT cargo compartment doors

ITEM		ACTION	RESULT
1	Locking handle- handle flap	PUSH	
2	Locking handle	PULL	Locking handle unlocked
WARNING: STOP THE OPENING PROCEDURE IF THE RED WARNING LIGHT FASHES. RESIDUAL PRESSURE COULD CAUSE THE DOOR TO OPEN WITH A SUDDEN FORCE AND INJURE PEOPLE AND/OR DAMAGE THE AIRCRAFT.			
3	Indicator flags (coloured red)	CHECK	Flags are out
4	Push button on latching handle	PUSH	Catch released
5	Latching handle	PULL DOWN FULLY	Door unlatched
6	Access door 112 CR (152 NR)	OPEN	
7	Door operation lever	SET TO "OPEN" POSITION AND HOLD THERE UNTIL THE GREEN INDICATOR LIGHT COMES ON	Door opens

8.1.1.2 Close the FWD and/or AFT cargo compartment door

ITEM		ACTION	RESULT
1	Door operation lever	SET TO "CLOSE" POSITION AND HOLD THERE UNTIL THE DOOR IS FULLY CLOSED	Door closes
2	Latching handle	PUSH UP FULLY	Door latched, push button on latching handle engages with an audible "click"
3	Locking handle	CLOSE	
4	Indicator flags (coloured red)	CHECK	Flags are in
5	Access door 112CR (152NR)	CLOSE	

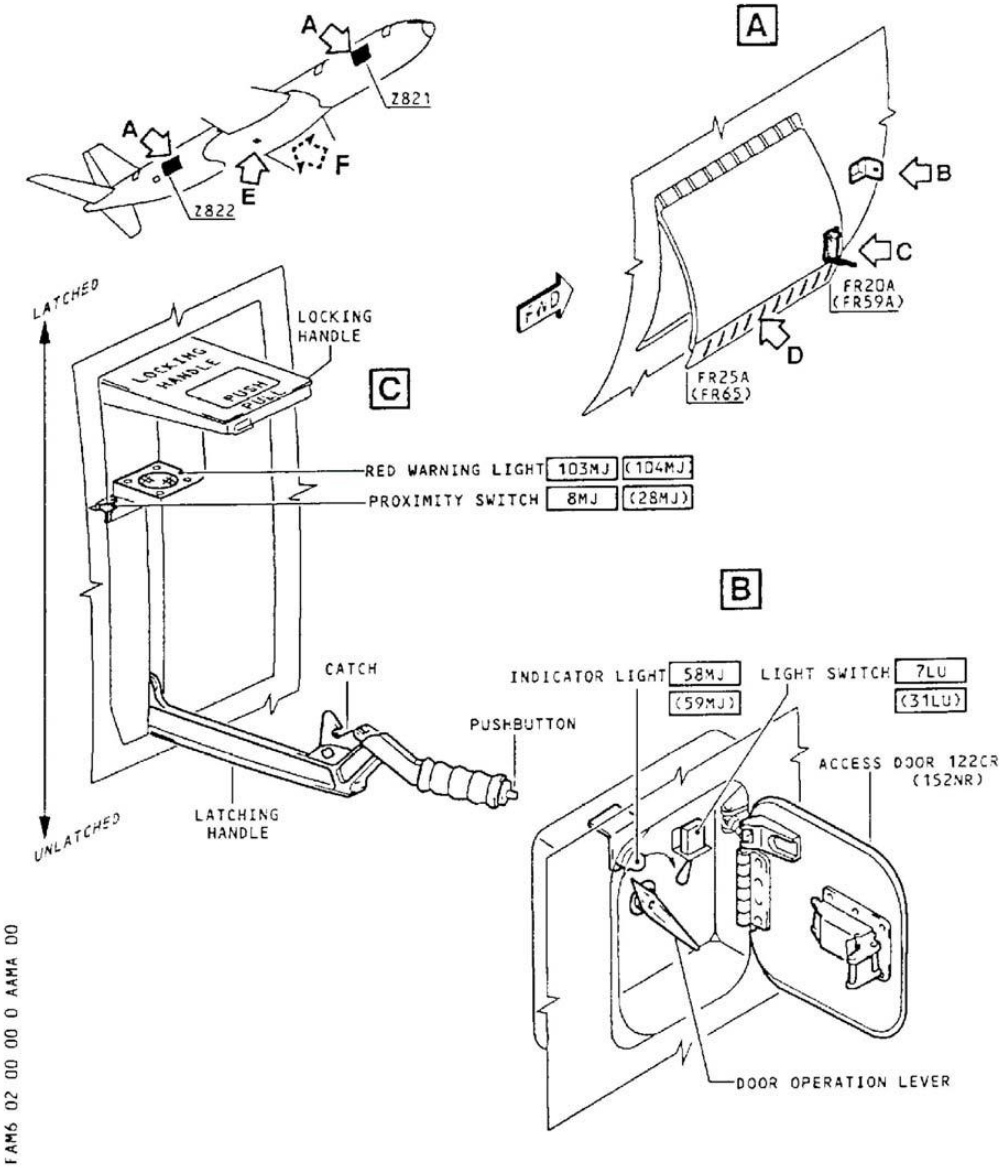

Figure 14. FWD, AFT Cargo Compartments – Door operation

8.1.2 ULD loading/unloading operation

The Cargo Loading System is semi-automatic and electrically powered. The ULD´s are driven by means of a control panel (one panel for each cargo hold).

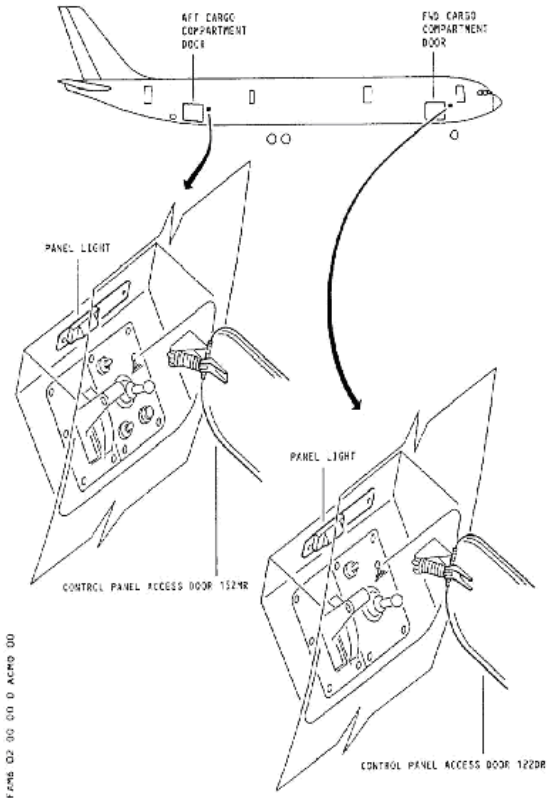

Figure 15. Control Panel Configuration

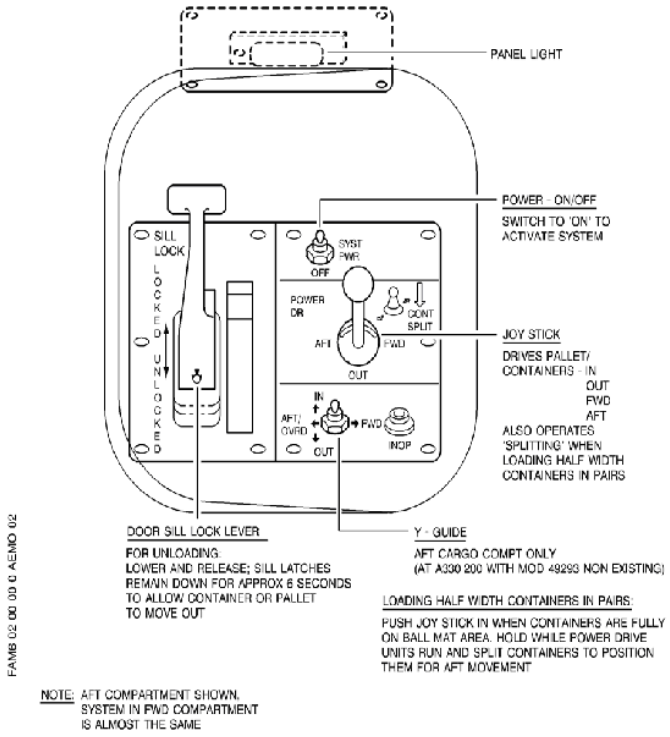

Figure 16. FWD & AFT CC Conveyance System Control

8.1.2.1 Pallet loading procedure to the first position

FWD CC

1. Set all latches according to the type of container/pallet:

    - Military dummy pallets: set all latches in lower position except the YZ latches and ARO-YZ latches.
    - LD3 dummy in 23R position: arise retractable Y guides.

2. Load the dummy pallets:

    3.1 By means of the fork-lift:

    - Military dummy pallets: Load part 1 and part 2 in the cargo bay and join them by means of the attaching mechanism. See Figure 3.
    - LD7 dummy pallets: Load part 1 and part 2 in the cargo bay and join them.

    2.2 By means of pallet loader:

    - Military dummy pallets: Load part 1 and part2 in the pallet loader and join them by means of the attaching mechanism.
    - LD7 dummy pallets: Load part1 and part2 in the pallet loader and join them.

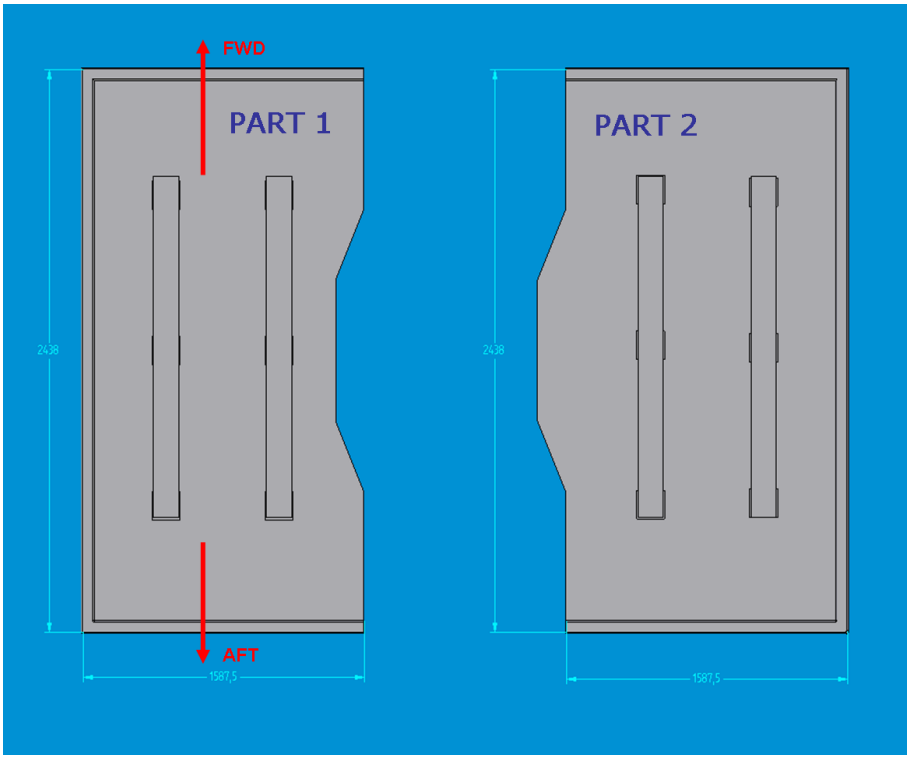

Figure 17. Dummy Palet Loading Position.

3. Open control panel door.
4. Set POWER switch to "ON".
5. Hold the joystick in "IN" position until the pallet contacts the continuous side guides.
   - In the case of LD3, hold the joystick until the container contacts the retractable Y guides.
6. Hold the joystick in "AFT" position until the pallet contacts the MTAD stop in the aft part of the compartment.

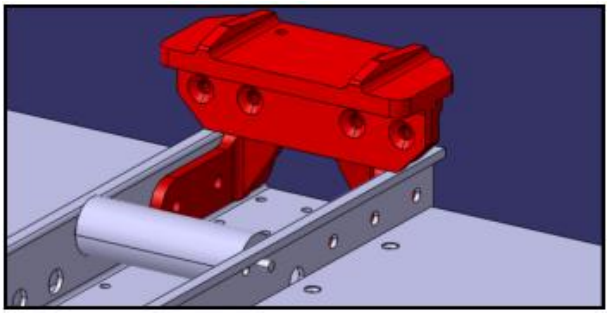

Figure 18. MTAD stop

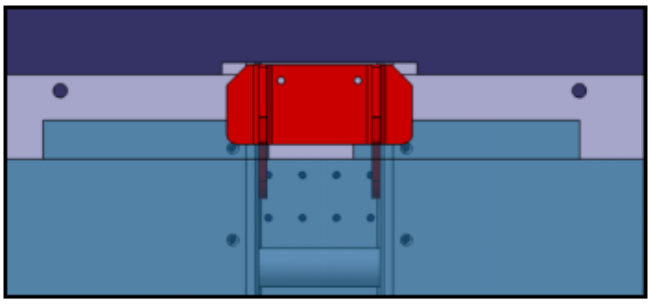

Figure 18. Pallet contact with the MTAD stop

7. Raise the latches in the following latches in order to grab the pallet.

   - Military dummy pallets: raise the first four A1 latches, starting from the left side in flight direction.
   - LD7 dummy pallets: raise the five A1 latches.
   - LD3 dummy pallets: raise a single B1 latch.

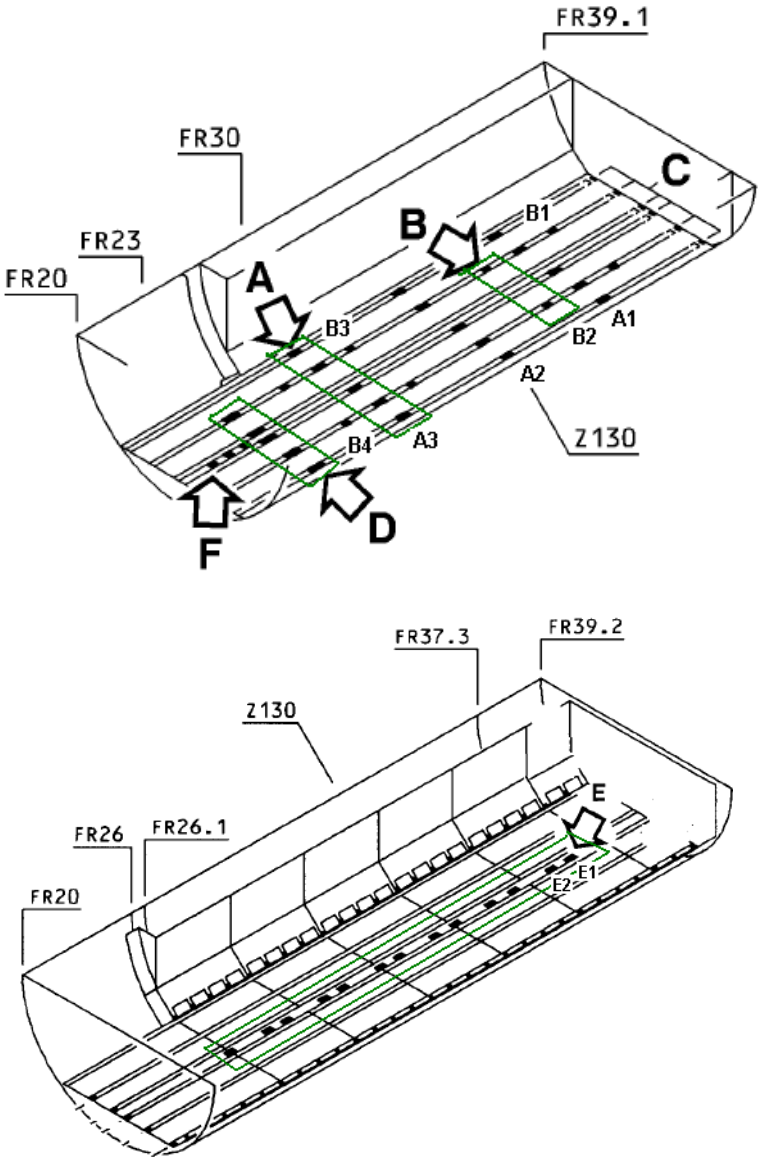

Figure 19. Latches in FWD CC

8. Check that latches grab the pallet: move the joystick FWD and AFT and check that the PDU´s after the raised latched is isolated and that the pallet do not move.
9. Check that there is no jam during loading process.
10. Set the POWER switch to "OFF".

AFT CC

1. Set all latches according to the type of container/pallet:

    - Military dummy pallets: set all latches in lower position except the YZ latches and ARO-YZ latches.
    - LD3 at 23R position: arise retractable Y guides.
    - LD3 at 44 position: set all latches in lower position except the number 9 (Figure 31) and the ARO latches number 10 (Figure 22) in door sill area.

2. Set overrideable Y guides in raised position (Figure 30).
3. Load the dummy pallets:

    1.1 By means of the fork-lift:

    - Military dummy pallets: Load part 1 and part 2 in the cargo bay and join them by means of the attaching mechanism.
    - LD7 dummy pallets: Load part 1 and part 2 in the cargo bay and join them.

    1.2 By means of the pallet loader:

    - Military dummy pallets: Load part1 and part2 in the pallet loader and join them by means of the attaching mechanism.
    - LD7 dummy pallets: Load part1 and part2 in the pallet loader and join them.

4. Open control panel door.
5. Set POWER switch to "ON".
6. Hold the joystick in "IN" position until the pallet contacts the continuous side guides.

    - LD3: hold the joystick until the container contacts the retractable Y guides.
    - LD3 at position 44: hold the joystick in "IN" position until the container is stopped with the aft Y-guides number 9 (Figure 10 and 32). Set the joystick to AFT position and hold it until the LD3 fills the position 44.

7. Set the Y-guide switch to the FWD position and at the same time set the joystick to the FWD position.
8. Hold the Y-guide switch in the FWD position until the pallet/container is clear of the Y-guides.
9. Hold the joystick in FWD position until the pallet/container contacts the MTAD stops, placed in the forward part of the cargo hold.
10. Raise the latches in the following latches in order to grab the pallet.

    - Military dummy pallets: raise the first four B latches, starting from the right side in flight direction.
    - LD7 dummy pallets: raise the five B latches.
    - LD3 dummy: raise a single C1 latch and I1&I2 latches.

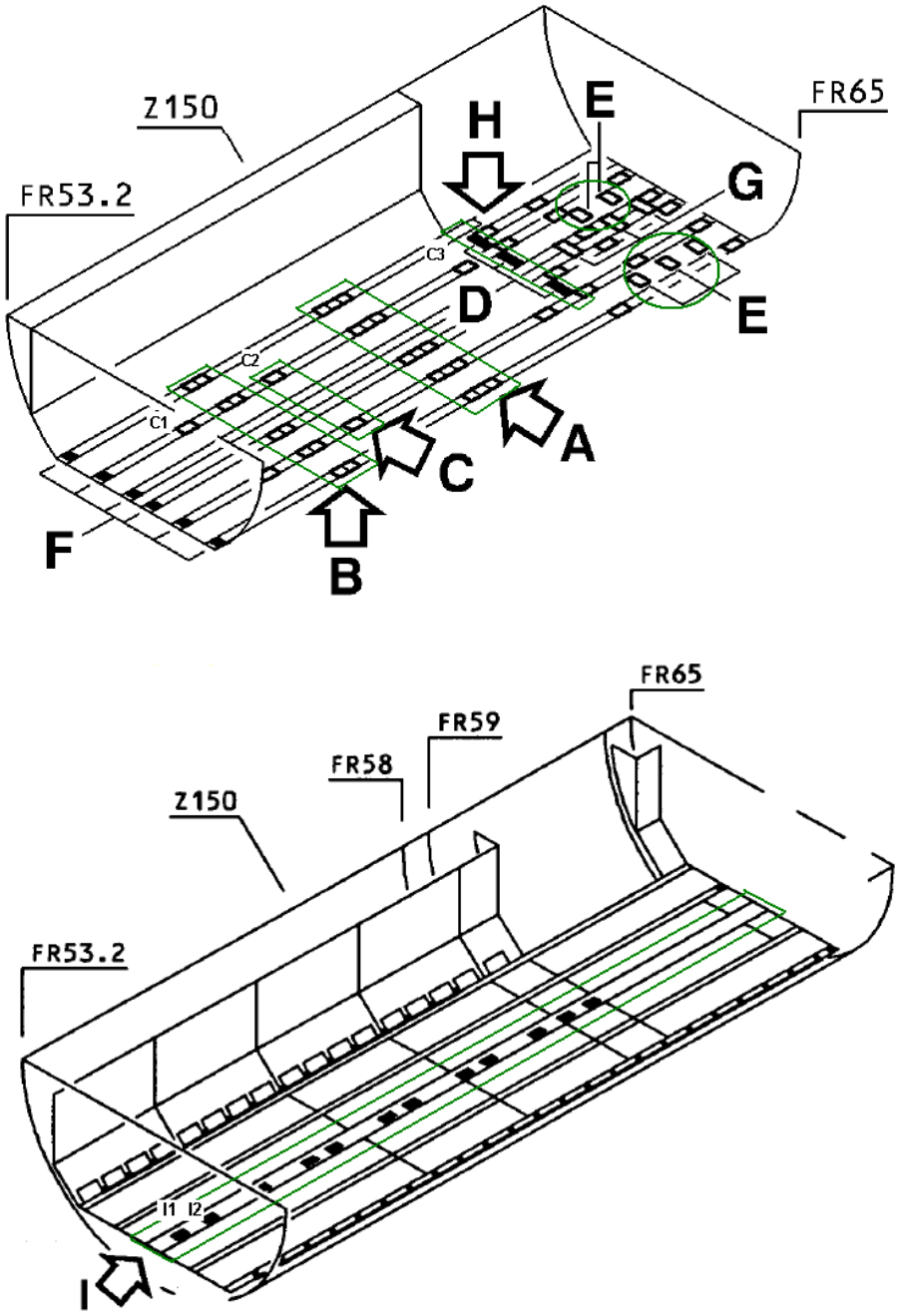

Figure 20. Latches in AFT CC

11. Check that latches grab the pallet: move the joystick FWD and AFT and check that the PDU´s after the raised latched is isolated and that the pallet do not move.
12. Check that there is no jam during loading process.
13. Set the POWER switch to "OFF".

8.1.2.2 Pallet moving procedure

FWD CC

1. Release the latches grabbing the pallet/container.
2. Set the power switch to "ON".

3. Hold the joystick in FWD position until the container achieves the desired position (approximately).
4. Raise the following placed now in the aft of the pallet/container in order to actuate as a stop:

   - Military pallets: A latches (A1, A2... depending on the position)
   - LD7 containers: A latches (A1, A2... depending on the position).
   - LD3 containers: B latches (B1, B2...) or A2 (depending on the position).

5. Hold the joystick in AFT position until the pallet/container contacts the stops.
6. Raise the latches necessaries to grab the pallet.
7. Check that latches grab the pallet.
8. Check that there is no jam during moving process.
9. Check that PDU´s associated to the XZ latches are isolated when the latches are lifted
10. Set the power switch to "OFF".

AFT CC

1. Release the latches grabbing the pallet/container.
2. Set the power switch to "ON".
3. Hold the joystick in AFT position until the container achieves the desired position (approximately).
4. Raise the following placed now in the aft of the pallet/container in order to actuate as a stop:

   - Military pallets: A latches (A1, A2... depending on the position)
   - LD7 containers: A latches (A1, A2... depending on the position).
   - LD3 containers: B latches (B1, B2...) or A2 (depending on the position).

5. Hold the joystick in FWD position until the pallet/container contacts the stops.
6. Raise the latches necessaries to grab the pallet.
7. Check that latches grab the pallet.
8. Check that there is no jam during moving process.
9. Check that PDU´s associated to the XZ latches are isolated when the latches are lifted
10. Set the power switch to "OFF".

8.1.2.3 Pallet/Container unloading procedure (FWD/AFT CC)

1. Release the latches grabbing the pallet/container.
2. In the case of the military dummy pallets, 96"x125" dummy pallets and LD6, separate part 1 and part 2 or both LD3´s.
3. Set the power switch to "ON".
4. Hold the joystick in the OUT position until the pallet/container moves out a bit from the compartment and unload, by means of a forklift, the first part of the military/96"x125" dummy pallets the or the LD3 dummy pallet.
5. Hold the joystick in the OUT position until the second part of the military/96"x125" dummy pallet moves out a bit from the compartment and unload it by means of the forklift.
6. Set the power switch to "OFF".
7. Close control panel door.

8.2 Figures

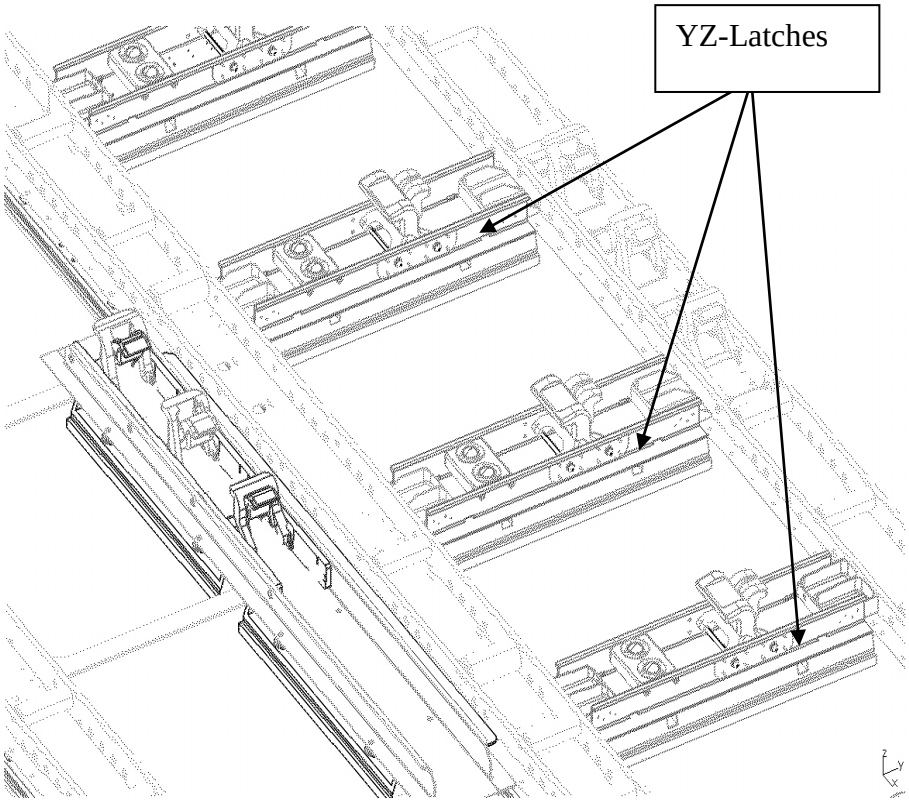

Figure 21. YZ-Latches

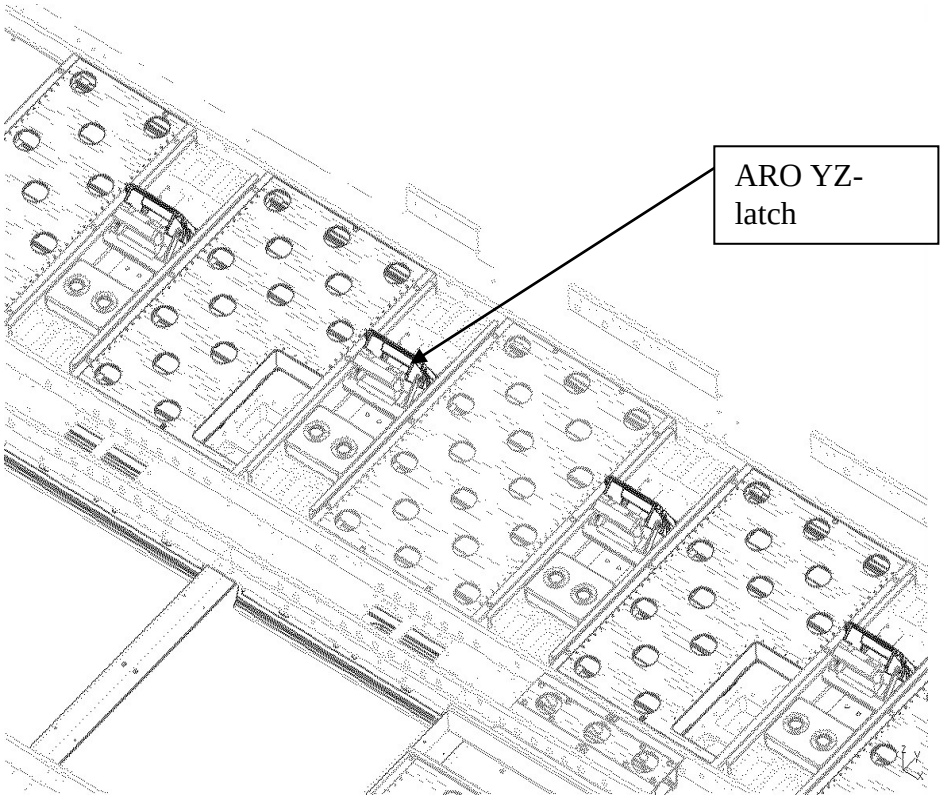

Figure 22. ARO YZ-latches in FWD CC

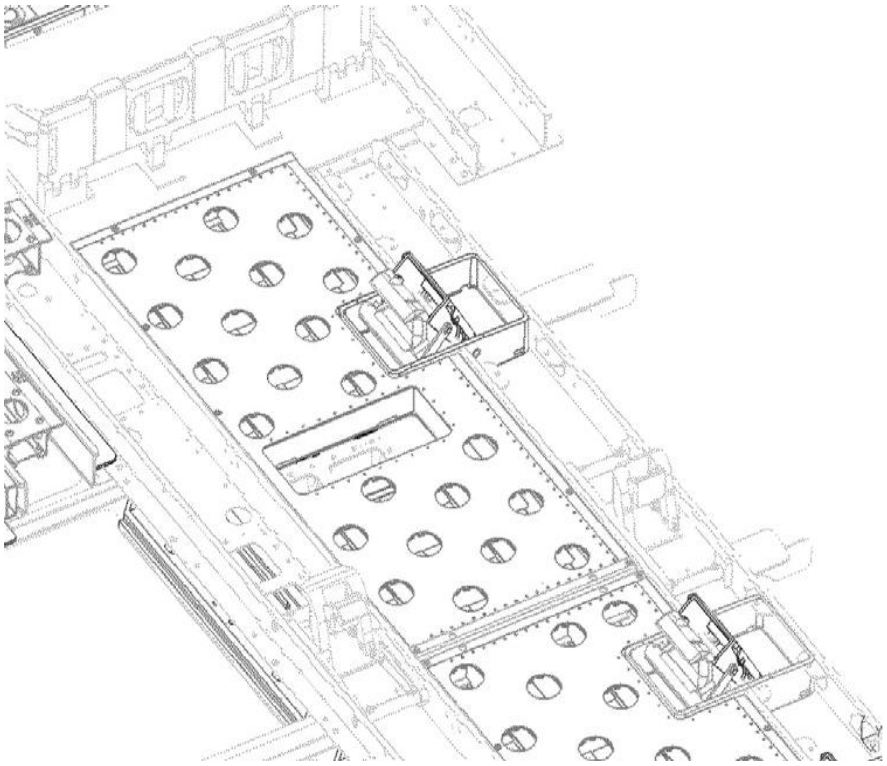

Figure 23. ARO-YZ latches in AFT CC

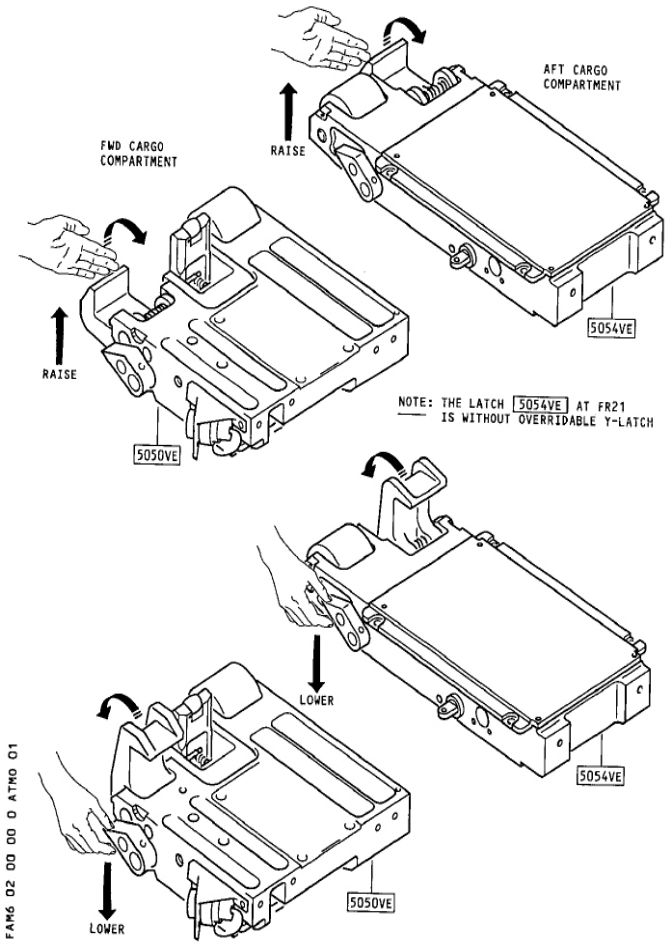

Figure 24. Manually Operated Door Sill Latches (YZ- latches)

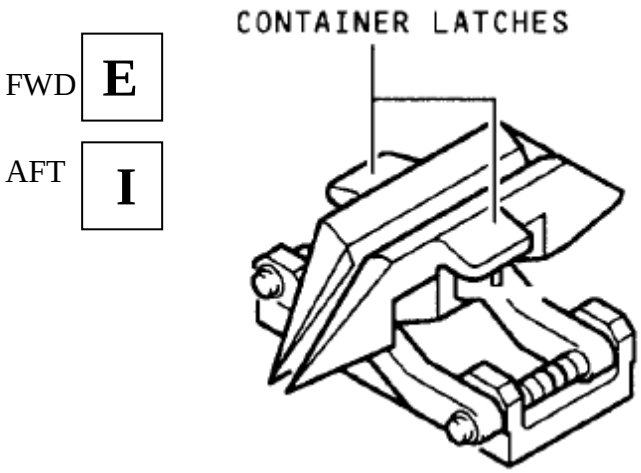

Figure 25. LD3 YZ-latches

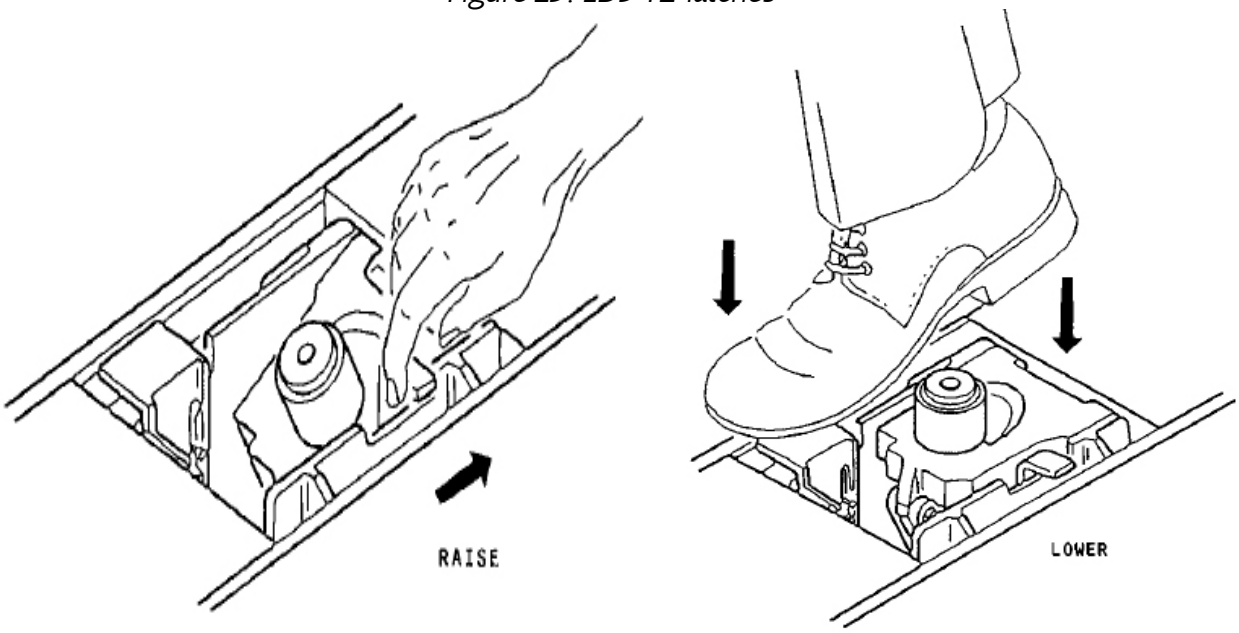

Figure 26. Retractable Y guide (Item 6 on Figures 4 & 5)

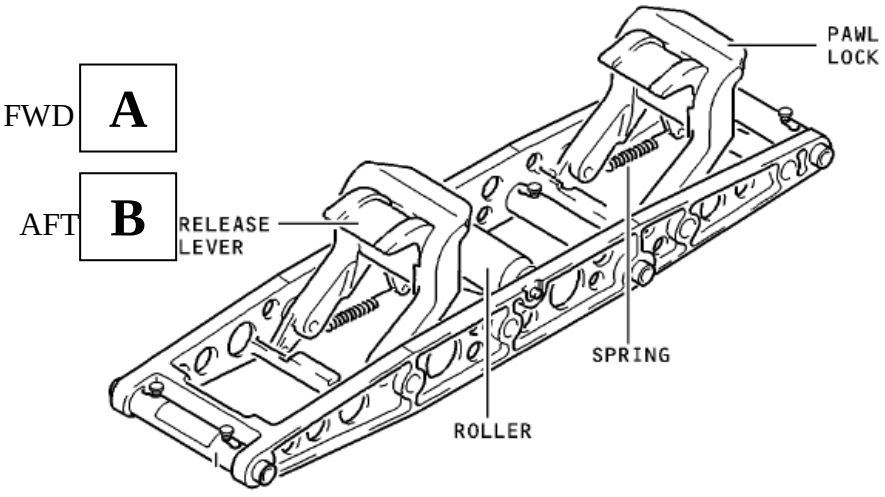

Figure 27. XZ Latches in FWD and FWD Compartment

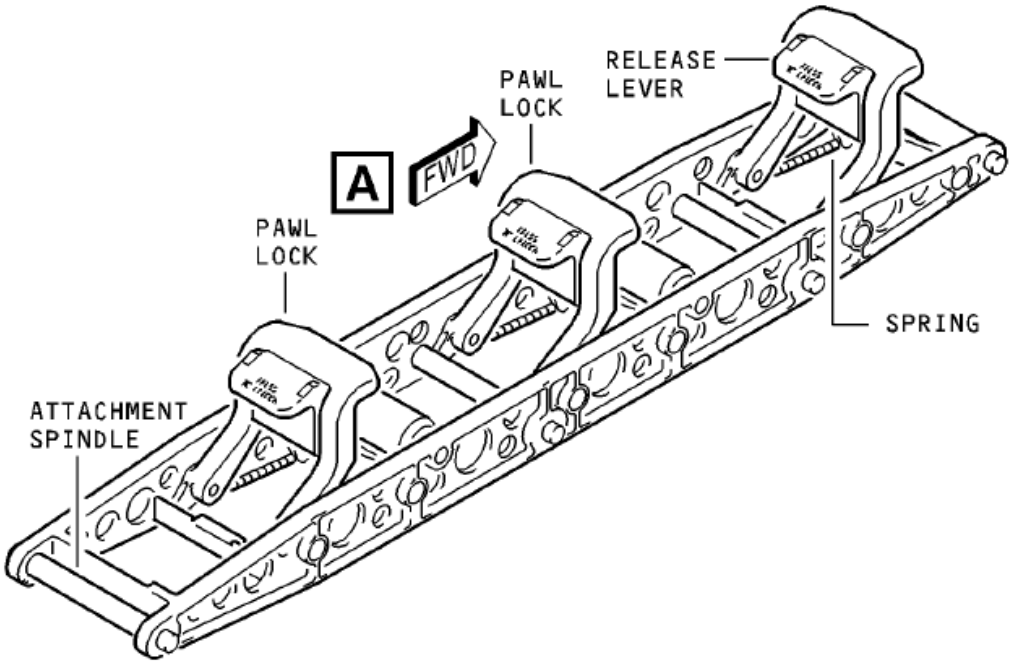

Figure 28. XZ latches in AFT Compartment

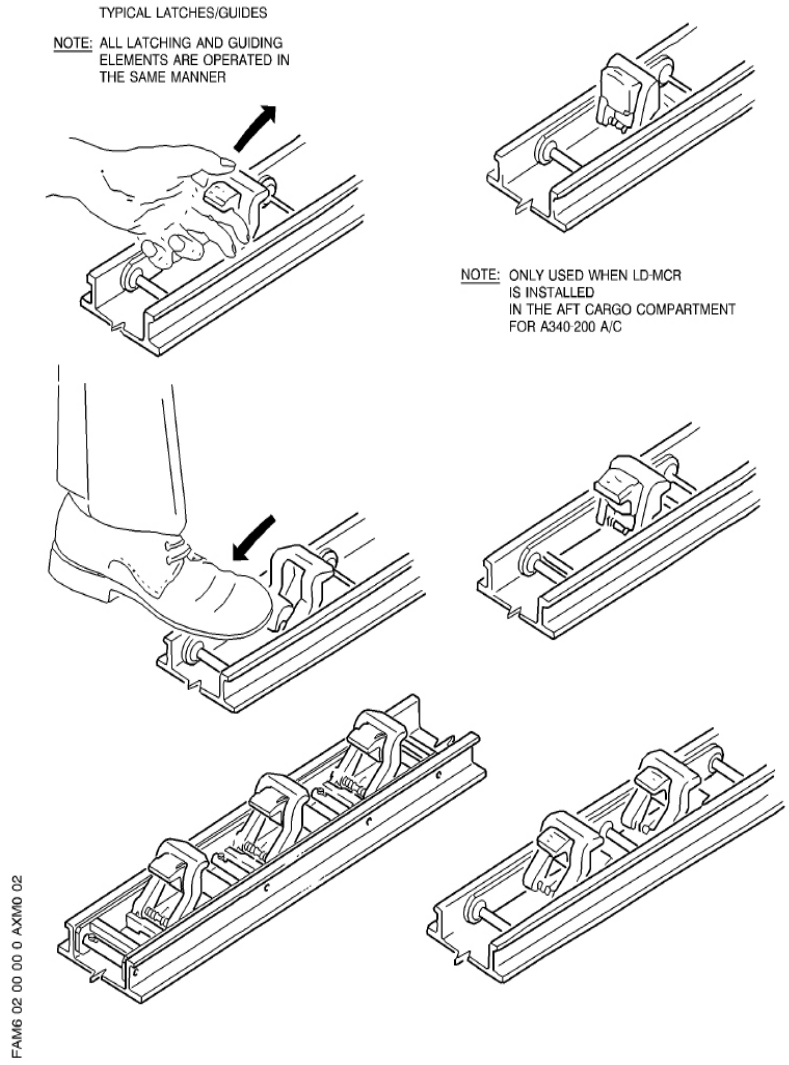

Figure 29. Pallet/Container Latches

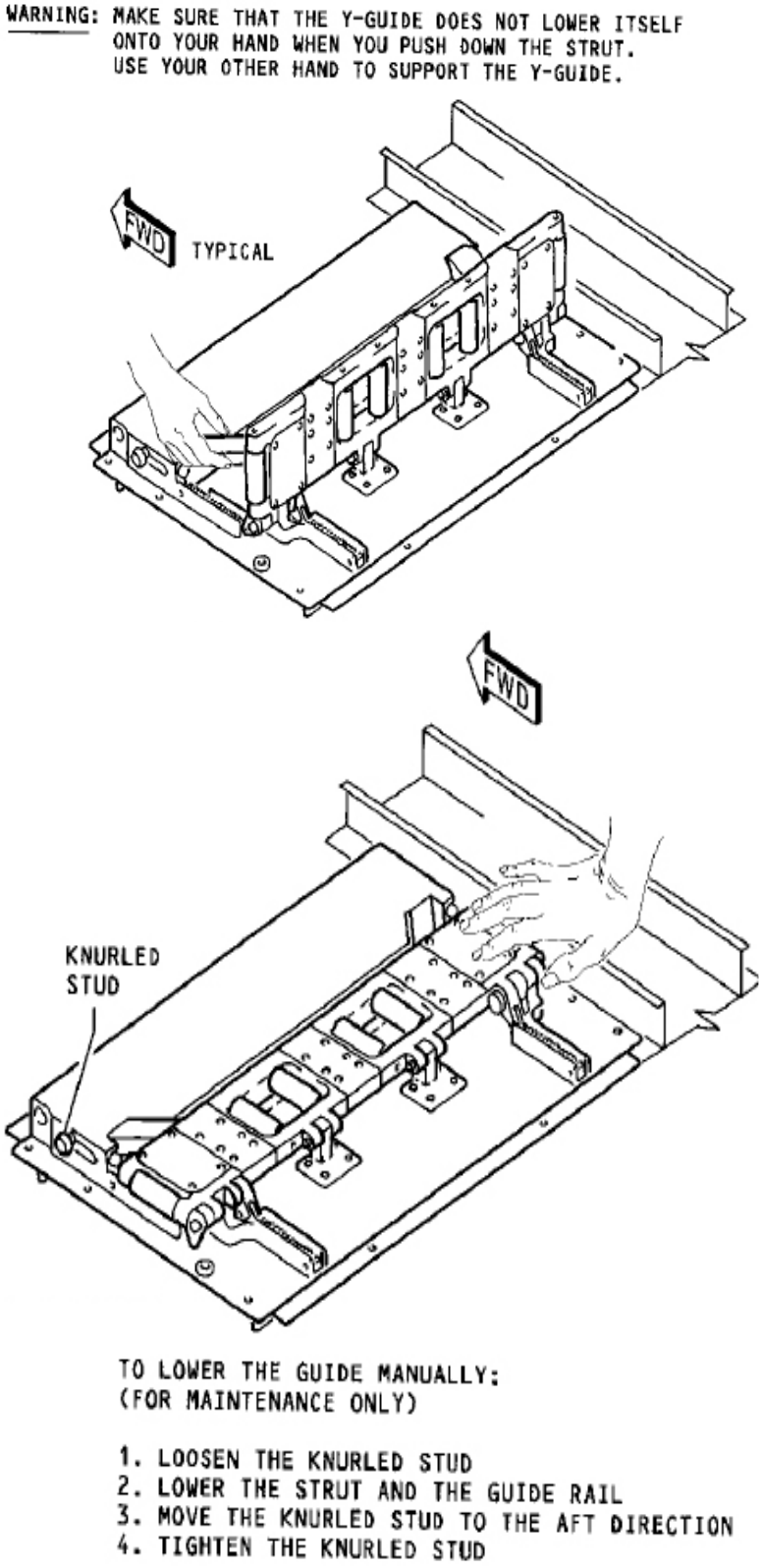

Figure 30. AFT Y-guide overrideable

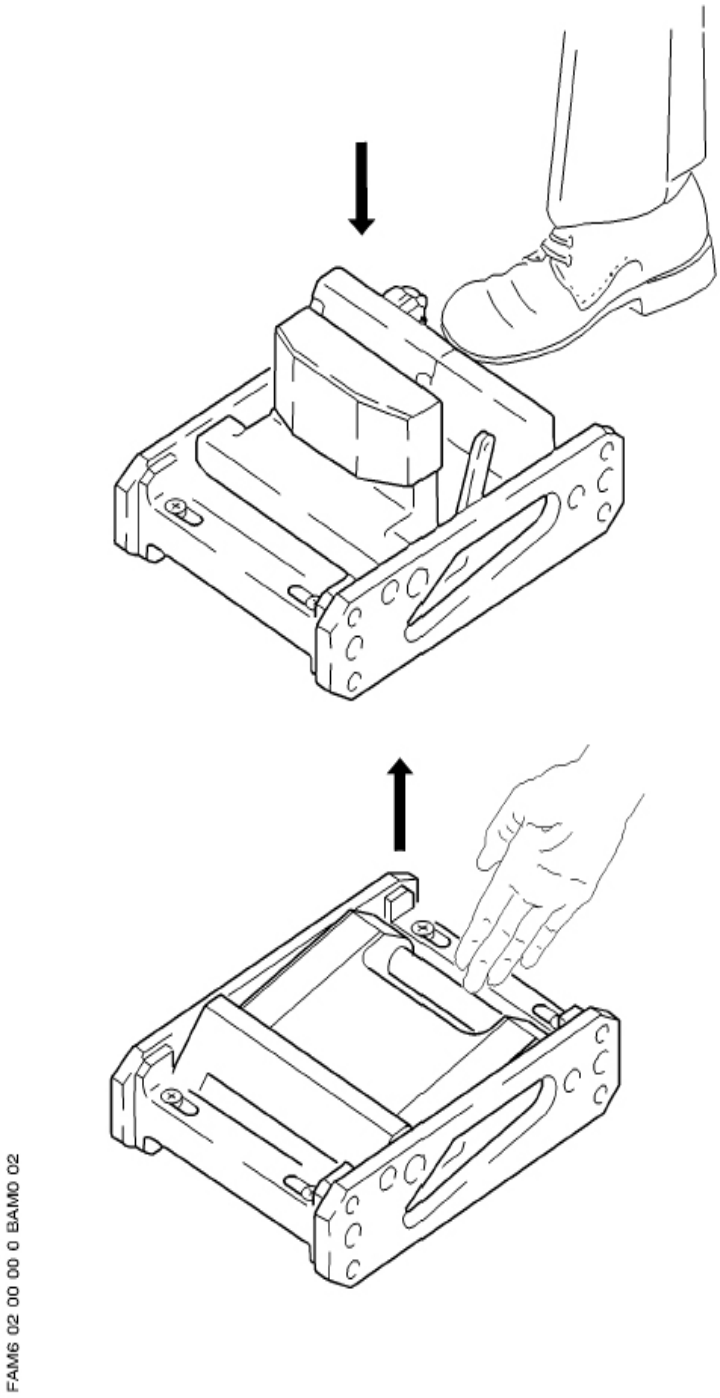

Figure 31. AFT Y-guide retractable

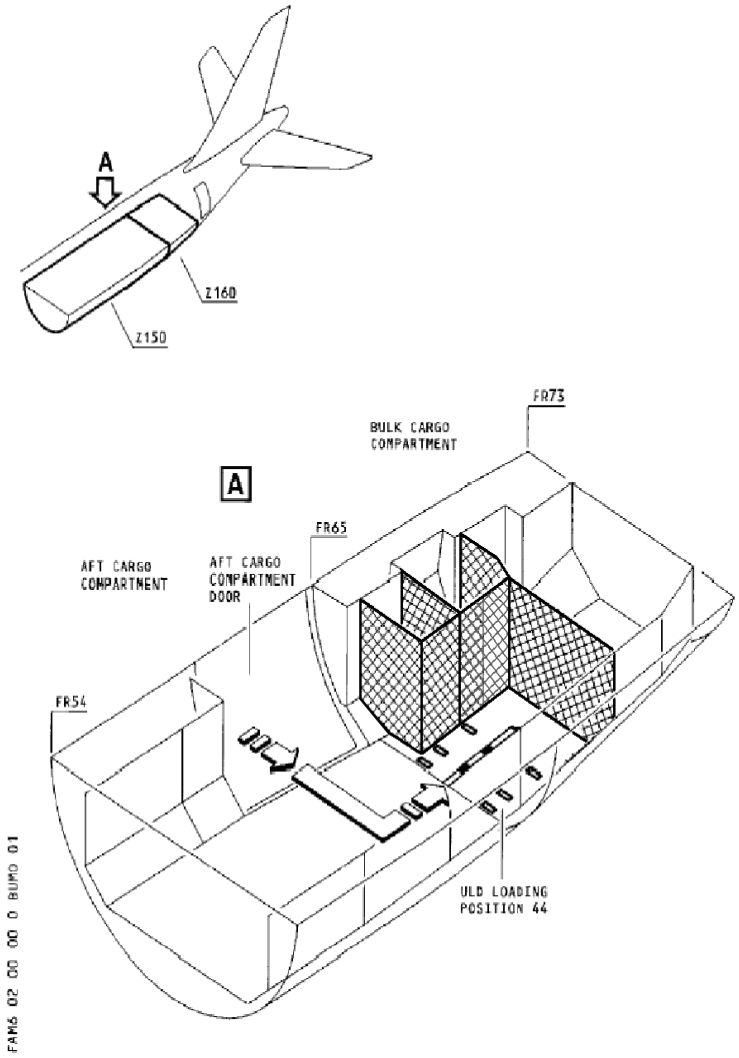

Figure 32. Loading position 44 in Bulk CC

Fwd CC right hand side placards **Fwd CC left hand side placards**

Figure 33. Placards in side panel showing the position numbering and separation

8.3 Test Data Sheet

8.3.1 PREVIOUS CHECK-OUTS

STEP	STEP RESULT (TICK BOX)				COMMENT (IF FAIL)
5.2.1	**Roller of each (longitudinal) PDU comes up in FWD direction when holding the joystick 9MY (109MY) in FWD direction**				
	PASS		FAIL		
	Roller of each (longitudinal) PDU comes up in AFT direction when holding the joystick 9MY (109MY) in AFT direction				
	PASS		FAIL		
	Each PDU moves down and stop when releasing the joystick 9MY (109MY)				
	PASS		FAIL		
	Roller of each (longitudinal) PDU stops when lifting each latch with a proximity switch				
	PASS		FAIL		
	Roller of each (transversal) PDU comes up in IN direction when holding the joystick 9MY (109MY) in IN direction				
	PASS		FAIL		
	Roller of each (transversal) PDU comes up in OUT direction when holding the joystick 9MY (109MY) in OUT direction				
	PASS		FAIL		
	Each PDU moves down and stop when releasing the joystick 9MY (109MY)				
	PASS		FAIL		
	Roller of each PDU in the ball mat does not move after removing the cover of scanning device and holding the joystick 9MY (109MY) in FWD direction.				
	PASS		FAIL		
	Roller of each (longitudinal) PDU comes up in FWD direction after removing the cover of the scanning device and holding the joystick 9MY (109MY) in FWD direction.				
	PASS		FAIL		
	Roller of each PDU in the ball mat does not move after removing the cover of scanning device and holding the joystick 9MY (109MY) in AFT direction.				
	PASS		FAIL		
	Roller of each (longitudinal) PDU comes up in AFT direction after removing the cover of the scanning device and holding the joystick 9MY (109MY) in AFT direction.				
	PASS		FAIL		
	Roller of each transversal PDU does not operate after removing the cover of the scanning device and holding the joystick 9MY (109MY) in IN direction				
	PASS		FAIL		
5.2.2	**Balance assy lowers when the distance between the top of the roller and the top of the housing is less than 15 mm.**				
	PASS		FAIL		
	Transversal PDU´s comes up and turns in IN direction when holding the joystick 9MY (109MY) in IN direction (doorsill 5054VE YZ-latchdown)				
	PASS		FAIL		
	Transversal PDU´s stop when rising doorsill 5054VE YZ-latch				
	PASS		FAIL		

	Transversal PDU´s comes up and turns in IN direction when holding the joystick 9MY (109MY) in IN direction (doorsill 5050VE1 YZ-latchdown)				
	PASS		FAIL		
	Transversal PDU´s stop when rising doorsill 5050VE1 YZ-latch				
	PASS		FAIL		
	Transversal PDU´s comes up and turns in IN direction when holding the joystick 9MY (109MY) in IN direction (doorsill 5050VE2 YZ-latchdown)				
	PASS		FAIL		
	Transversal PDU´s stop when rising doorsill 5050VE2 YZ-latch				
	PASS		FAIL		
	Transversal PDU´s comes up and turns in IN direction when holding the joystick 9MY (109MY) in IN direction (doorsill 5050VE3 YZ-latchdown)				
	PASS		FAIL		
	Transversal PDU´s stop when rising doorsill 5050VE3 YZ-latch				
	PASS		FAIL		
	Roller of each PDU in the ball mat does not move after removing the cover of scanning device and holding the joystick 9MY (109MY) in AFT direction.				
	PASS		FAIL		
	Roller of each (longitudinal) PDU comes up in AFT direction after removing the cover of the scanning device and holding the joystick 9MY (109MY) in AFT direction.				
	PASS		FAIL		
	Overridable Y latches of the doorsill lowers fully when moving SILL LOCK handle to UNLOCKED position				
	PASS		FAIL		
	Overridable Y latches of the doorsill lift completely when moving the doorsill to LOCKED position				
	PASS		FAIL		
	Yellow electric pump does not operate when moving door operation lever to open position				
	PASS		FAIL		
	Door operation lever starts to close when moving the door operation lever to close position				
	PASS		FAIL		

8.3.2 FWD CC

STEP	STEP RESULT (TICK BOX)				COMMENT (IF FAIL)
6.2.1.1	**Locking handle gets unlocked when pulling locking handle**				
	PASS		FAIL		
	Flags are out after locking handle getting unlocked				
	PASS		FAIL		
	Catch releases after pushing button on locking handle				
	PASS		FAIL		
	Door gets unlatched after pulling down fully				
	PASS		FAIL		
	Door opens when lever is set to "OPEN"				
	PASS		FAIL		

6.2.1.8	**Doorsill latches are released without getting jammed**				
	PASS		FAIL		
6.2.1.9	**Military pallet can be loaded without getting jammed**				
	PASS		FAIL		
	Military pallet can be moved to each configured position without problem				
	PASS		FAIL		
	Latches grab the pallet in each configured position				
	PASS		FAIL		
	PDU´s associated to latches get isolated when the latched are lift				
	PASS		FAIL		
	Military pallet can be unloaded without getting jammed				
	PASS		FAIL		
	96"x125" container can be loaded without getting jammed				
	PASS		FAIL		
	96"x125" container can be moved to each configured position without problem				
	PASS		FAIL		
	Latches grab the container in each configured position				
	PASS		FAIL		
	PDU´s associated to latches get isolated when the latched are lift				
	PASS		FAIL		
	96"x125" con be unloaded without getting jammed				
	PASS		FAIL		
	LD6 container can be loaded without getting jammed				
	PASS		FAIL		
	LD6 container can be moved to each configured position without problem				
	PASS		FAIL		
	Latches grab the container in each configured position				
	PASS		FAIL		
	LD6 container can be unloaded without getting jammed				
	PASS		FAIL		
	LD3 container can be loaded without getting jammed				
	PASS		FAIL		
	LD3 container can be moved to each configured position without problem				
	PASS		FAIL		
	Latches grab the container in each configured position				
	PASS		FAIL		
	LD3 container can be unloaded without getting jammed				
	PASS		FAIL		
6.2.1.10	**Doorsill latches are lifted without getting jammed**				
	PASS		FAIL		
	FWD CLS gets electrically isolated when doorsill latches are lifted				
	PASS		FAIL		
6.2.1.13	**Door closes when after setting door operation lever to "CLOSE" position (and holding there until the process finishes)**				
	PASS		FAIL		
	Audible click when pushing button on latching handle				
	PASS		FAIL		
	Door latched after noticing audible click				
	PASS		FAIL		

	Flags are in after closing locking handle				
	PASS		FAIL		

8.3.3 AFT CC

STEP	STEP RESULT (TICK BOX)				COMMENT (IF FAIL)
6.2.2.1	**Locking handle gets unlocked when pulling locking handle**				
	PASS		FAIL		
	Flags are out after locking handle getting unlocked				
	PASS		FAIL		
	Catch releases after pushing button on locking handle				
	PASS		FAIL		
	Door gets unlatched after pulling down fully				
	PASS		FAIL		
	Door opens when lever is set to "OPEN"				
	PASS		FAIL		
6.2.2.8	**Doorsill latches are released without getting jammed**				
	PASS		FAIL		
6.2.2.9	**Military pallet can be loaded without getting jammed**				
	PASS		FAIL		
	Military pallet can be moved to each configured position without problem				
	PASS		FAIL		
	Latches grab the pallet in each configured position				
	PASS		FAIL		
	PDU´s associated to latches get isolated when the latched are lift				
	PASS		FAIL		
	Military pallet can be unloaded without getting jammed				
	PASS		FAIL		
	96"x125" container can be loaded without getting jammed				
	PASS		FAIL		
	96"x125" container can be moved to each configured position without problem				
	PASS		FAIL		
	Latches grab the container in each configured position				
	PASS		FAIL		
	PDU´s associated to latches get isolated when the latched are lift				
	PASS		FAIL		
	96"x125" con be unloaded without getting jammed				
	PASS		FAIL		
	LD6 container can be loaded without getting jammed				
	PASS		FAIL		
	LD6 container can be moved to each configured position without problem				
	PASS		FAIL		
	Latches grab the container in each configured position				
	PASS		FAIL		
	LD6 container can be unloaded without getting jammed				
	PASS		FAIL		

	LD3 container can be loaded without getting jammed					
	PASS		FAIL			
	LD3 container can be moved to each configured position without problem					
	PASS		FAIL			
	Latches grab the container in each configured position					
	PASS		FAIL			
	LD3 container can be unloaded without getting jammed					
	PASS		FAIL			
6.2.2.10	**Doorsill latches are lifted without getting jammed**					
	PASS		FAIL			
	FWD CLS gets electrically isolated when doorsill latches are lifted					
	PASS		FAIL			
6.2.2.13	**Door closes when after setting door operation lever to "CLOSE" position (and holding there until the process finishes)**					
	PASS		FAIL			
	Audible click when pushing button on latching handle					
	PASS		FAIL			
	Door latched after noticing audible click					
	PASS		FAIL			
	Flags are in after closing locking handle					
	PASS		FAIL			

Table 5. Test Data Sheet Table