

Scenario 1: Pass Through Airlock from Outside Environment

Scenario Description

When a user wants to pass through the airlock from the outside environment, and the Airlock is in Automatic mode, and with both doors already closed. The airlock must safely open the outer door, followed by opening the inner door and completing the action by closing the inner door.

Version Control

Versio n #	Date	Author	Description
0.1	01/01/2006	Corie Rhodes	Initial Draft
1.0	01/10/2006	Corie Rhodes	Initial Version

Test Scripts

The following scripts will cover this scenario:

- **1.1 FATLowerEnvironmentPressure** - Test the airlock in auto mode to ensure a user can pass through the airlock when the environment pressure is less than the cabin pressure.
- **1.2 FATGreaterEnvironmentPressure** - Test the airlock in auto mode to ensure a user can pass through the airlock when the environment pressure is greater than the cabin pressure.
- **1.3 FATManualModeGreaterEnvironmentPressure** - Test the airlock in manual mode to ensure a user can pass through the airlock when the environment pressure is greater than the cabin pressure.
- **1.4 FATManualModeLowerEnvironmentPressure** - Test the airlock in manual mode to ensure a user can pass through the airlock when the environment pressure is less than the cabin pressure.

Use Case

- A user passes through the Airlock.

Script 1.4: Manual Mode - Environment Pressure Greater than Cabin Pressure

Script Description

The test will follow the following steps:

1. Equalize lock sensor pressure with the environment pressure
2. Open the Outer Door
3. Close the Outer Door
4. Equalize lock sensor pressure with cabin pressure
5. Open the Inner Door
6. Close the Inner Door

Testing Requirements

This test script covers the following specific testing requirements:

- The environment pressure should be less than the cabin pressure
- The Airlock should be in Automatic mode
- The test should begin with both doors closed
- The Airlock should finish the test in a SEALED state
- The cabin pressure should be unchanged
- The Airlock pressure should be the same as the environment pressure

Setup

1. Airlock must exist, with both doors closed and be in auto mode.
2. Environment pressure must be lower than the cabin pressure.

Test Data

Data	Value
Lock Sensor	lockSensor: 1
Inner Door External Sensor	innerDoorExternalSensor: 1.0
Outer Door External Sensor	outerDoorExternalSensor: 0.5

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Airlock Outer Door State	airLock.isOuterDoorClosed: true
Airlock Inner Door State	airLock.isInnerDoorClosed: true
Airlock State	airLock.isSealed: true
Airlock Mode	airLock.isInAutoMode: true

Teardown

- Make sure airlock has both doors in a 'CLOSED' state, the airlock is in auto mode and that the airlock state is 'SEALED'.
- Make sure cabin pressure is unchanged and that airlock pressure is the same as the cabin pressure.

Script Steps

Step #	Test Action	Expected Results	Pass/Fail
1	Exualize with external pressure (Enter "ex")	lock sensor is equalized with the external pressure	Pass
2	Open external door (Enter "ox")	External door is opened, airlock set to "UNSEALED".	Pass
3	Close external door (Enter "cx")	external door is closed. Airlock returns to a "SEALED" state.	Pass
4	Exualize with internal pressure (Enter "ei")	lock sensor is equalized with the cabin pressure	Pass

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Step #	Test Action	Expected Results	Pass/Fail
5	Open internal door (Enter "oi")	internal door is opened. Airlock is set to "UNSEALED" state.	Pass
6	Close internal door (Enter "ci")	Internal door is closed. Airlock is returned to a "SEALED" state.	Pass

Test Execution

Date/Time	Tester	Test ID	Test Phase	Status
08/12/2022	Corie Rhodes	corierhodes1	System Cycle 1	Passed

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Screenshots

corierhodes1:

```
Airlock: state: SEALED, mode: MANUAL
Exterior PressureSensor: pressure: 0.5 bar
Lock PressureSensor: pressure: 1.0 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 0.5 bar, internal pressure: 1.0 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

When the program starts, the airlock is in manual mode, both doors are closed and the airlock is set to SEALED.

```
Airlock: state: SEALED, mode: MANUAL
Exterior PressureSensor: pressure: 0.5 bar
Lock PressureSensor: pressure: 0.5 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 0.5 bar, internal pressure: 0.5 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 0.5 bar
```

The user then enters “ex” which triggers the airlock to equalize the lock sensor with the external environment.

```
Airlock: state: UNSEALED, mode: MANUAL
Exterior PressureSensor: pressure: 0.5 bar
Lock PressureSensor: pressure: 0.5 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: OPEN, external pressure: 0.5 bar, internal pressure: 0.5 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 0.5 bar
```

The user then enters “ox” which triggers the airlock to open the external door.

```
Airlock: state: SEALED, mode: MANUAL
Exterior PressureSensor: pressure: 0.5 bar
Lock PressureSensor: pressure: 0.5 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 0.5 bar, internal pressure: 0.5 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 0.5 bar
```

The user then enters “cx”, which triggers the airlock to close the external door.

```
Airlock: state: SEALED, mode: MANUAL
Exterior PressureSensor: pressure: 0.5 bar
Lock PressureSensor: pressure: 1.0 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 0.5 bar, internal pressure: 1.0 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

The user then enters “ei” which triggers the airlock to equalize the lock sensor with the cabin pressure.

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```
Airlock: state: UNSEALED, mode: MANUAL  
Exterior PressureSensor: pressure: 0.5 bar  
Lock PressureSensor: pressure: 1.0 bar  
Interior PressureSensor: pressure: 1.0 bar  
Exterior Door: state: CLOSED, external pressure: 0.5 bar, internal pressure: 1.0 bar,  
Interior Door: state: OPEN, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

The user then enters "oi" which triggers the airlock to open the internal door.

```
Airlock: state: SEALED, mode: MANUAL  
Exterior PressureSensor: pressure: 0.5 bar  
Lock PressureSensor: pressure: 1.0 bar  
Interior PressureSensor: pressure: 1.0 bar  
Exterior Door: state: CLOSED, external pressure: 0.5 bar, internal pressure: 1.0 bar,  
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

The use then enters "ci" which trigger the airlock to close the internal door. The test concludes with the airlock in a "SEALED" state, with both doors closed and the lock sensor the same as the cabin pressure.